

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Caru J. Thompson Examiner #: 79244 Date: 1/29/03  
 Art Unit: 1774 Phone Number 30 56488 Serial Number: 09/963,491  
 Mail Box and Bldg/Room Location: CP3/11/8/28 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Electroconductive Device

Inventors (please provide full names): Tsun Kamatani; Hidemasa Mizutani; Shinjiro Okada;  
Akua Tsuboyama; Takao Takiguchi; Takashi Moriyama

Earliest Priority Filing Date: 09/20/2000

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please do a search for claim 1-10. Please do a CAS search.

Please see attached.

Sharks. ☺

## STAFF USE ONLY

## Type of Search

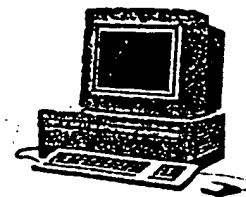
## Vendors and cost where applicable

Searcher: Kenneth RM NA Sequence (#) 300-354 STN ☒  
 Searcher Phone #: 300-354 AIA Sequence (#) 300-354 Dialog ☒  
 Searcher Location: SLC 1700 Structure (#) 300-354 Questel/Orbit ☒  
 Date Searcher Picked Up: 2/1/03 Bibliographic ☒ Databases ☒  
 Date Completed: 2/6/03 Litigation ☒ Lexis/Nexis ☒  
 Searcher Prep or Review time: 20m Fulltext ☒ Sequence Systems ☒  
 Clerical Prep Time: 1hr 45min Patent Family ☒ WWW/Internet ☒  
 Online Time: 1hr 45min Other ☒ Other (specify) ☒

# EIC1700

## Search Results

### Feedback Form (Optional)



Scientific & Technical Information Center

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact *the EIC searcher* who conducted the search *or contact*:

Kathleen Fuller, Team Leader, 308-4290, CP3/4 3D62

### Voluntary Results Feedback Form

➤ I am an examiner in Workgroup:

Example: 1713

➤ Relevant prior art found, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

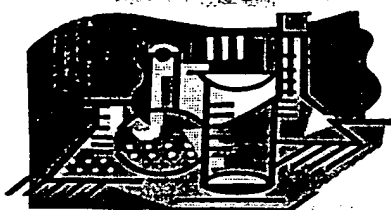
- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art not found:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Search results were not useful in determining patentability or understanding the invention.

Other Comments:

Drop off completed forms in CP3/4 - 3D62 .



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*Scientific and Technical Information Center*

## Search Results Feedback Form

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact the searcher whose name is circled below.

Kathleen Fuller 308-4290

John Calve 308-4139

Barba Koroma 305-3542

Eric Linnell 308-4143

All searchers are located in the library in CP3/4 3D62

=> file reg

FILE 'REGISTRY' ENTERED AT 12:53:18 ON 06 FEB 2003  
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Property values tagged with IC are from the ZIC/VINITI data file  
provided by InfoChem.

STRUCTURE FILE UPDATES: 4 FEB 2003 HIGHEST RN 485752-98-5  
DICTIONARY FILE UPDATES: 4 FEB 2003 HIGHEST RN 485752-98-5

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP  
PROPERTIES for more information. See STN Note 27, Searching Properties  
in the CAS Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> file caplus

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FILE COVERS 1907 - 6 Feb 2003 VOL 138 ISS 6  
FILE LAST UPDATED: 5 Feb 2003 (20030205/ED)

This file contains CAS Registry Numbers for easy and accurate  
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=> file hcaplus

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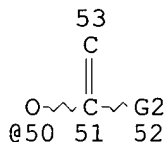
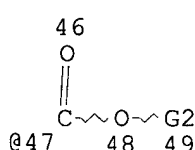
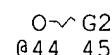
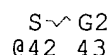
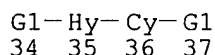
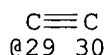
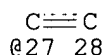
FILE COVERS 1907 - 6 Feb 2003 VOL 138 ISS 6

FILE LAST UPDATED: 5 Feb 2003 (20030205/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que

L14 STR



VAR G1=F/AK/27/29/44/42/47/50

VAR G2=H/F/AK/27/29

NODE ATTRIBUTES:

CONNECT IS E2 RC AT 35

CONNECT IS E2 RC AT 36

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 35

GGCAT IS UNS AT 36

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 20

STEREO ATTRIBUTES: NONE

L21 29355 SEA FILE=HCAPLUS ABB=ON PLU=ON (ELECTROLUMINESC? OR EL) (4A) DE VICE?

L22 3452 SEA FILE=HCAPLUS ABB=ON PLU=ON CONDUCT? AND L21

L23 SEL PLU=ON L22 22,1-3452 RN : 5046 TERMS

L24 5034 SEA FILE=REGISTRY ABB=ON PLU=ON L23

L26 33 SEA FILE=REGISTRY SUB=L24 SSS FUL L14

L27 241 SEA FILE=HCAPLUS ABB=ON PLU=ON L26

L28 22 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND L27

L30 51 SEA FILE=HCAPLUS ABB=ON PLU=ON L27 AND (ELECTROLUMINESC? OR EL) (4A) DEVICE?

L31 65 SEA FILE=HCAPLUS ABB=ON PLU=ON L27(L) (PREP OR IMF OR SPN)/RL

L32 11 SEA FILE=HCAPLUS ABB=ON PLU=ON L30 AND L31

L33 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L31 AND ?EMIT? (3A) ?LIGHT?

L34 11 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 OR L32

L35 22 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND L28

L36 27 SEA FILE=HCAPLUS ABB=ON PLU=ON L35 OR L34

KOROMA EIC1700

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L36 ANSWER 1 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:8090 HCAPLUS

DOCUMENT NUMBER: 138:39739

TITLE: White electroluminescent polymer containing  
3,3'-bicarbazole group incorporated into polyarylene  
main chain

INVENTOR(S): Lee, Ji Hoon; Kang, In Nam

PATENT ASSIGNEE(S): Samsung Sdi Co. Ltd, S. Korea

SOURCE: Brit. UK Pat. Appl., 57 pp.

CODEN: BAXXDU

DOCUMENT TYPE: Patent

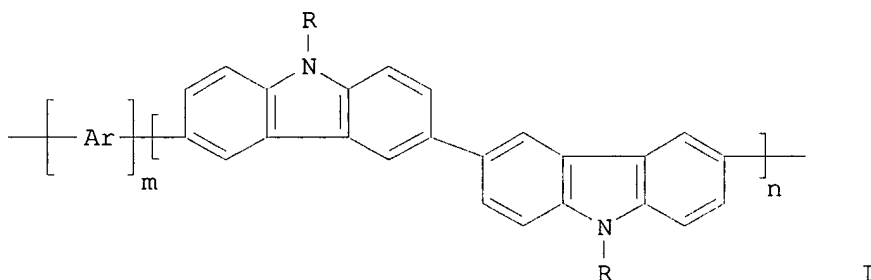
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2376469	A1	20021218	GB 2002-2559	20020204
JP 2003012777	A2	20030115	JP 2002-102675	20020404
US 2003008175	A1	20030109	US 2002-170208	20020613
PRIORITY APPLN. INFO.:			KR 2001-33140	A 20010613

GI



AB A white electroluminescent polymer (I) comprises 3,3'-bicarbazole group incorporated into a polyarylene main chain, where Ar represents C6-C26-aryls or C4-C14-aryls contg. at least one heteroatom, aryls being unsubstituted or substituted with at least one C1-C12-alkyl, alkoxy or amine-functional radical, R represents hydrogen, linear, branched or cyclic C1-C12-alkyl groups, C6-C14-aryls unsubstituted or substituted with C1-C12-alkyl, alkoxy or amine-functional radicals, m and n are independent nos. conforming to 0.1 .ltoreq. m/(m+n) .ltoreq. 0.9 and 0.1 .ltoreq. n/(m+n) .ltoreq. 0.9. The polymers are used in manuf. of **electroluminescent devices**. Thus, white electroluminescent polymer was produced by copolymn. of N,N'-diethyl-6,6'-dibromo-3,3'-bicarbazole and 9,9-di(2-ethylhexyl)-2,7-dibromofluorene at 80.degree. for 72 h in DMF/toluene in the presence of bis(1,4-cyclooctadiene)nickel catalyst.

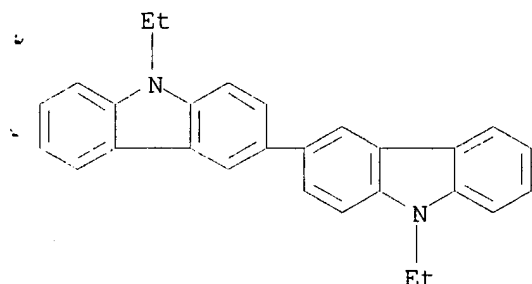
IT **20466-00-6P**, N,N'-Diethyl-3,3'-bicarbazole

RL: **IMF (Industrial manufacture)**; PRP (Properties); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)

(in prodn. of monomers for white electroluminescent polymers contg. bicarbazole group incorporated into polyarylene main chain)

RN 20466-00-6 HCAPLUS

CN 3,3'-Bi-9H-carbazole, 9,9'-diethyl- (9CI) (CA INDEX NAME)



IC ICM C08G061-00

ICS C09K011-06

CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 73

ST bicarbazole polyarylene white electroluminescent polymer prodn

IT Luminescent substances

(electroluminescent; prodn. of white electroluminescent polymers contg. bicarbazole group incorporated into polyarylene main chain)

IT **Electroluminescent devices**

(white **electroluminescent** polymers contg. bicarbazole group incorporated into polyarylene main chain for manuf. of)

IT 19287-62-8P **20466-00-6P**, N,N'-Diethyl-3,3'-bicarbazole  
116292-11-6P

RL: **IMF (Industrial manufacture)**; PRP (Properties); RCT

(Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)

(in prodn. of monomers for white electroluminescent polymers contg. bicarbazole group incorporated into polyarylene main chain)

IT 86-28-2, N-Ethylcarbazole 86-74-8, Carbazole 111-83-1, n-Octyl bromide  
625-95-6, 3-Iodotoluene 16433-88-8, 2,7-Dibromofluorene 18908-66-2,  
2-Ethylhexyl bromide

RL: RCT (Reactant); RACT (Reactant or reagent)

(in prodn. of monomers for white electroluminescent polymers contg. bicarbazole group incorporated into polyarylene main chain)

IT 57102-86-0P 188200-93-3P 198964-46-4P 478548-50-4P

RL: **IMF (Industrial manufacture)**; PRP (Properties); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)

(monomer; in prodn. of white electroluminescent polymers contg. bicarbazole group incorporated into polyarylene main chain)

IT 33221-58-8

RL: CAT (Catalyst use); **USES (Uses)**

(prodn. of white electroluminescent polymers contg. bicarbazole group incorporated into polyarylene main chain)

IT 478548-51-5P 478548-52-6P

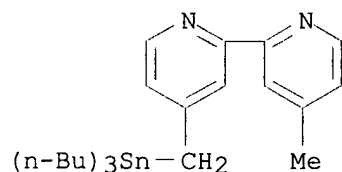
RL: **DEV (Device component use)**; **IMF (Industrial manufacture)**; PRP (Properties); **PREP (Preparation)**; **USES (Uses)**

(prodn. of white electroluminescent polymers contg. bicarbazole group incorporated into polyarylene main chain)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ACCESSION NUMBER: 2002:978183 HCAPLUS  
 DOCUMENT NUMBER: 138:63589  
 TITLE: Emissive multichromophoric systems  
 INVENTOR(S): Therien, Michael J.  
 PATENT ASSIGNEE(S): The Trustees of the University of Pennsylvania, USA  
 SOURCE: PCT Int. Appl., 76 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

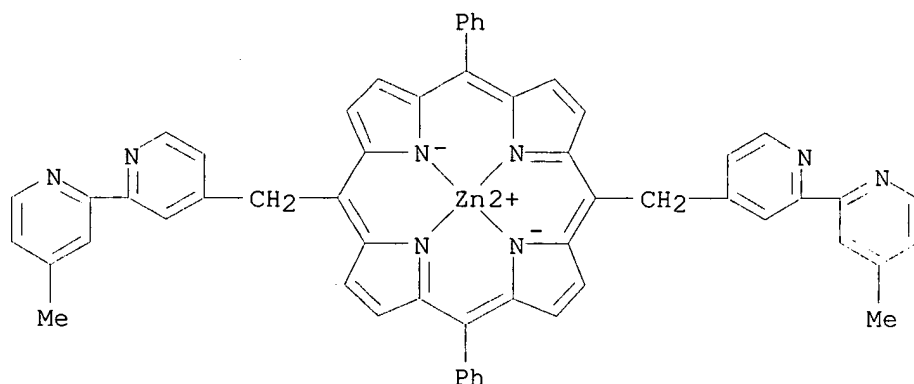
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002104072	A2	20021227	WO 2002-US5584	20020226
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRIORITY APPLN. INFO.:			US 2001-271520P	P 20010226
			US 2001-306504P	P 20010719
AB Methods of producing light in the 650-2000 nm region are described which entail exciting a conjugated compd. comprising .gtoreq.2 covalently bound moieties so that the light produced exceeds the total produced independently by the moieties. Preferably, the transition dipoles of the moieties are correlated in defined phase relationships. Lasers, optical amplifiers, light-sensitive elements, and <b>electroluminescent devices</b> employing the materials are also described. Polymer grid systems (e.g., electrodes, triodes) comprising a body of elec. <b>conducting</b> org. polymer having an open and porous network morphol. and an active electronic material located within at least a portion of the void spaces defined by the porous network are described in which the active electronic material comprises the conjugated compds.				
IT <b>146985-15-1</b> RL: RCT (Reactant); RACT (Reactant or reagent) (emissive multichromophoric systems and devices using them)				
RN 146985-15-1 HCAPLUS				
CN 2,2'-Bipyridine, 4-methyl-4'-[(tributylstannyl)methyl]- (9CI) (CA INDEX NAME)				



IT **147470-61-9P**  
 RL: **SPN (Synthetic preparation); PREP (Preparation)**  
 (emissive multichromophoric systems and devices using them)  
 RN 147470-61-9 HCAPLUS  
 CN Zinc, [5,15-bis[(4'-methyl[2,2'-bipyridin]-4-yl)methyl]-10,20-diphenyl-



21H,23H-porphinato(2-)-.kappa.N21,.kappa.N22,.kappa.N23,.kappa.N24]-,  
(SP-4-1)- (9CI) (CA INDEX NAME)



- IC ICM H05B  
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74, 76, 78  
ST laser emissive multichromophoric system; optical amplifier emissive multichromophoric system; emissive multichromophoric system; **electroluminescent device** emissive multichromophoric system; photodetector emissive multichromophoric system  
IT Luminescent substances  
(emissive multichromophoric systems)  
IT **Conducting** polymers  
(emissive multichromophoric systems and devices using them)  
IT Dyes  
(laser; emissive multichromophoric systems)  
IT Dye lasers  
**Electroluminescent devices**  
Optical amplifiers  
Optical detectors  
(using emissive multichromophoric systems)  
IT 156821-65-7P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(doped; emissive multichromophoric systems and devices using them)  
IT 162478-94-6P 479506-72-4P 479506-76-8P 479506-84-8P 479506-88-2P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(emissive multichromophoric systems and devices using them)  
IT 76-05-1, Trifluoroacetic acid, reactions 98-59-9, p-Toluenesulfonyl chloride 100-52-7, Benzaldehyde, reactions 112-35-6, Triethylene glycol monomethyl ether 128-08-5, N-Bromosuccinimide 429-41-4, Tetrabutylammonium fluoride 557-34-6, Zinc acetate 624-95-3, 3,3-Dimethyl-1-butanol 1066-54-2, Trimethylsilylacetylene 2975-46-4, Trimethylsilylpropynal 3437-95-4, 2-Iodothiophene 4039-32-1, Lithium bistrimethylsilylamide 5158-46-3, Methyl zinc chloride 7486-35-3 7646-85-7, Zinc dichloride, reactions 7718-54-9, Nickel dichloride, reactions 15979-38-1 21211-65-4, 2,2'-Dipyrrylmethane 26153-38-8, 3,5-Dihydroxybenzaldehyde 39175-16-1, 2,5-Dimethoxyphenyl lithium 42930-39-2, Butyl zinc chloride 54329-76-9 68880-56-8 78389-87-4, Trimethylsilyl ethynyl zinc chloride **146985-15-1** 146985-16-2

147470-64-2 156821-57-7 156821-62-4 156821-63-5 162456-73-7  
 162456-74-8 162479-04-1 162479-06-3 162479-07-4 162479-08-5  
 162479-10-9 162524-13-2 342888-11-3 479506-92-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(emissive multichromophoric systems and devices using them)

IT 7440-66-6DP, Zinc, reaction products with porphyrins 22112-89-6P,  
 5,15-Diphenylporphyrin 62921-74-8P 147470-60-8P 151256-86-9P,  
 5,15-Dibromo-10,20-diphenylporphyrin 156821-62-4DP, (5-Bromo-10,20-  
 diphenylporphinato)zinc, reaction products with zinc 162479-00-7P  
 162479-02-9P 206049-38-9P 320730-84-5P 446033-33-6P 446033-37-0P  
 446034-12-4P 446034-13-5P 446034-15-7P 446034-16-8P 448896-67-1P  
 448896-68-2P 448896-70-6P 448896-71-7P 448896-72-8P 448896-73-9P  
 448896-74-0P 448896-75-1P 479506-65-5P 479506-69-9P 479506-80-4P  
 479506-96-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)

(emissive multichromophoric systems and devices using them)

IT 146985-18-4P **147470-61-9P** 147470-62-0P 147470-63-1P  
 151462-68-9P 151462-70-3P 151462-71-4P 151530-24-4P 156821-55-5P  
 156821-56-6P 156821-59-9P 162479-11-0P 162524-03-0P 175597-07-6P  
 448896-69-3P 479506-57-5P

RL: **SPN (Synthetic preparation); PREP (Preparation)**

(emissive multichromophoric systems and devices using them)

IT 156821-60-2P 333363-22-7P 333391-12-1P 448896-65-9P 448896-66-0P  
 448946-00-7P 479506-61-1P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material  
 use); PREP (Preparation); USES (Uses)

(emissive multichromophoric systems and devices using them)

L36 ANSWER 3 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:714468 HCAPLUS

DOCUMENT NUMBER: 137:255037

TITLE: **Electroluminescent devices**

INVENTOR(S): Miura, Kiyoshi; Okada, Shinjiro; Tsuboyama, Akira;  
 Moriyama, Takashi; Furukori, Manabu; Takiguchi, Takao;  
 Kamatani, Atsushi

PATENT ASSIGNEE(S): Canon Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

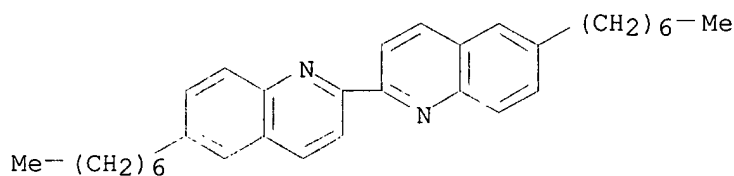
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002270378	A2	20020920	JP 2001-65652	20010308
PRIORITY APPLN. INFO.:			JP 2001-65652	20010308
AB The devices comprise: a glass substrate; a TFT matrix driver circuit; a 1st metal stripe electrode array (.dblvert. X); a hole transport layer; a red, a blue and a green phosphor matrix; an electron transport and a flexible <b>conductive</b> polymer layer; an ITO electrode stripe array (.dblvert. Y); and a glass substrate and a sealant resin.				
IT <b>332104-82-2</b>				
RL: DEV (Device component use); USES (Uses)				
(electroluminescent devices)				
RN 332104-82-2 HCAPLUS				
CN 2,2'-Biquinoline, 6,6'-diheptyl- (9CI) (CA INDEX NAME)				



IC ICM H05B033-26  
ICS G09F009-30; H05B033-14; H05B033-22  
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST electroluminescent multicolor phosphor matrix  
IT **Conducting** polymers  
Electrodes  
**Electroluminescent devices**  
Glass substrates  
Luminescence, **electroluminescence**  
Optical imaging **devices**  
Phosphors  
Thin film transistors  
(**electroluminescent devices**)  
IT 2085-33-8, Tris(8-quinolinolato)aluminum 50926-11-9, ITO 69079-52-3  
123847-85-8, .alpha.-NPD 195456-48-5, Poly(9,9-dioctyl-9H-fluorene-2,7-diyl) **332104-82-2**  
RL: DEV (Device component use); USES (Uses)  
(**electroluminescent devices**)

L36 ANSWER 4 OF 27 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2002:465655 HCAPLUS  
DOCUMENT NUMBER: 137:39158  
TITLE: **Conductive** component, organic  
**electroluminescent device** and  
production method  
INVENTOR(S): Kamatani, Atsushi; Takiguchi, Takao; Okada, Shinjiro;  
Tsuboyama, Akira; Moriyama, Takashi; Mizutani,  
Hidemasa  
PATENT ASSIGNEE(S): Canon Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

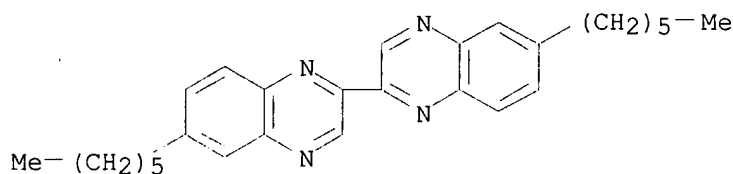
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002175886	A2	20020621	JP 2001-286040	20010920
US 2002135292	A1	20020926	US 2001-963441	20010927
PRIORITY APPLN. INFO.:			JP 2000-298025	A 20000929
			JP 2001-286040	A 20010920

OTHER SOURCE(S): MARPAT 137:39158

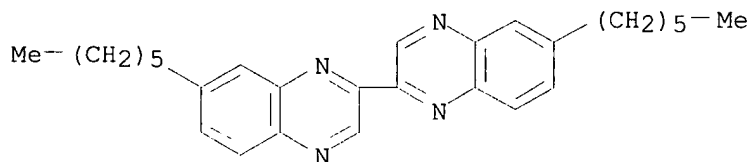
AB The invention refers to an **electroluminescent device** comprising a blend of org. compds. given by (RX)<sub>n</sub>-Ar-(X'R')<sub>m</sub> [X, X' = single bond, -O-, -S-, -OOC-, -COO-; R, R' = H, F, or C1-20 straight chain or branched alkyl which may contain -O-, -S-, -CH:CH-, -C.tplbond.C- within the chain; in the case where both X and X' are single bonds, R,R' may not both be H; m, n = 1 - 8] which are structural isomers as a

conductive layer.

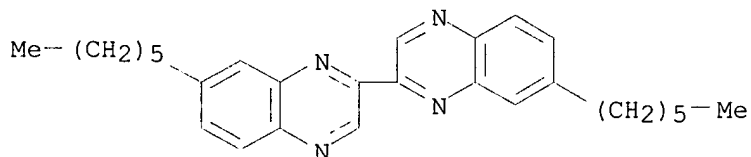
IT 436086-73-6P 436086-74-7P 436087-30-8P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (conductive component, org. electroluminescent  
 device and prodn. method)  
 RN 436086-73-6 HCAPLUS  
 CN 2,2'-Biquinoxaline, 6,6'-dihexyl- (9CI) (CA INDEX NAME)



RN 436086-74-7 HCAPLUS  
 CN 2,2'-Biquinoxaline, 6,7'-dihexyl- (9CI) (CA INDEX NAME)



RN 436087-30-8 HCAPLUS  
 CN 2,2'-Biquinoxaline, 7,7'-dihexyl- (9CI) (CA INDEX NAME)



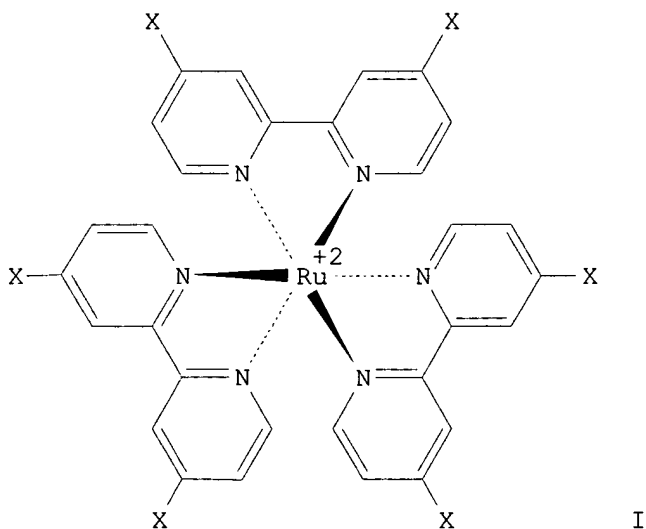
IC ICM H05B033-22  
 ICS H05B033-22; H05B033-10; H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 ST electroluminescent device conductive  
 material  
 IT Electroluminescent devices  
 (conductive component, org. electroluminescent  
 device and prodn. method)  
 IT 436086-73-6P 436086-74-7P 436087-30-8P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (conductive component, org. electroluminescent  
 device and prodn. method)  
 IT 4845-50-5, 1,4-Dioxane-2,3-diol 126225-90-9  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (conductive component, org. electroluminescent

**device** and prodn. method)  
 IT 436087-61-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (**conductive** component, org. **electroluminescent**  
**device** and prodn. method)

L36 ANSWER 5 OF 27 HCAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2002:464293 HCAPLUS  
 DOCUMENT NUMBER: 137:39099  
 TITLE: Luminescent material containing  
 tris(bipyridyl)ruthenium complex, and organic  
 electroluminescent apparatus  
 INVENTOR(S): Shiratori, Toshiaki; Yamamoto, Kimitoshi; Higuchi,  
 Masayoshi; Inaba, Yukinori  
 PATENT ASSIGNEE(S): Keio University, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002173673	A2	20020621	JP 2000-370366	20001205
PRIORITY APPLN. INFO.:			JP 2000-370366	20001205
OTHER SOURCE(S):	MARPAT 137:39099			

GI



AB A luminescent material contain a tris(bipyridyl)ruthenium complex I  
 .cntdot.(PF6-)<sub>2</sub> (X = H, Me, CO<sub>2</sub>H, CO<sub>2</sub>Na; .gtoreq.2 of X is Me, CO<sub>2</sub>H, or  
 CO<sub>2</sub>Na) and an ionic **conductive** macromol. An org.  
**electroluminescent device** comprises the luminescent

material in an emitter layer which can be manufd. by spin coating process. The device shows quick response and provides light with high intensity.

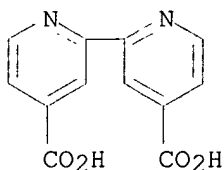
IT **6813-38-3**, 2,2'-Bipyridine-4,4'-dicarboxylic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(in prepn. of tris(bipyridyl)ruthenium complex as luminescent material component for electroluminescent app.)

RN 6813-38-3 HCAPLUS

CN [2,2'-Bipyridine]-4,4'-dicarboxylic acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS C09K011-06; H05B033-10; H05B033-14

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 38, 76, 78

ST luminescent material bipyridyl ruthenium complex combination ionic **conductor**; polymer ionic **conductor** combination ruthenium complex phosphor; **electroluminescent device** phosphor bipyridyl ruthenium complex; polyethylene oxide lithium salt electroluminescent phosphor.

IT **Conducting** polymers

(ionic; luminescent material as combination of tris(bipyridyl)ruthenium complex and ionic **conductor** for electroluminescent app.)

IT **Electroluminescent devices**

Phosphors

(luminescent material as combination of tris(bipyridyl)ruthenium complex and ionic **conductor** for electroluminescent app.)

IT Ionic **conductors**

(polymers; luminescent material as combination of tris(bipyridyl)ruthenium complex and ionic **conductor** for electroluminescent app.)

IT 371254-58-9P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(in luminescent material as combination of tris(bipyridyl)ruthenium complex and ionic **conductor** for electroluminescent app.)

IT 88936-90-7, Poly(ethylene oxide)-lithium triflate complex

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(in luminescent material as combination of tris(bipyridyl)ruthenium complex and ionic **conductor** for electroluminescent app.)

IT 64189-98-6P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(in prepn. of tris(bipyridyl)ruthenium complex as luminescent material component for electroluminescent app.)

IT **6813-38-3**, 2,2'-Bipyridine-4,4'-dicarboxylic acid 19542-80-4,

cis-Bis(2,2'-bipyridine)dichlororuthenium

RL: RCT (Reactant); RACT (Reactant or reagent)

(in prepn. of tris(bipyridyl)ruthenium complex as luminescent material component for electroluminescent app.)

L36 ANSWER 6 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:447332 HCAPLUS

DOCUMENT NUMBER: 137:25981

TITLE: **Conductive** liquid crystal and organic electroluminescent element

INVENTOR(S): Tsuboyama, Akira; Okada, Shinjiro; Takiguchi, Takao; Moriyama, Takashi

PATENT ASSIGNEE(S): Canon Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002170685	A2	20020614	JP 2000-362115	20001129
PRIORITY APPLN. INFO.:			JP 2000-362115	20001129

AB The invention refers to an **electroluminescent device** comprising a **conductive** liq. crystal as carrier transport or luminescent layer, wherein the liq. crystal displays smectic and nematic phases over a temp. range, and the smectic phase can be adjusted via temp. control or voltage control to change the orientation and carrier mobility and selectively form high and low **cond.** regions in order to increase the luminescent efficiency and prevent short circuits.

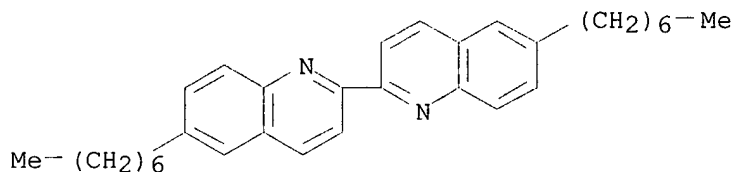
IT **332104-82-2**

RL: DEV (Device component use); USES (Uses)

(conductive liq. crystal and org. electroluminescent element)

RN 332104-82-2 HCAPLUS

CN 2,2'-Biquinoline, 6,6'-diheptyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS H05B033-22; C09K011-06; G02F001-137; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **conductive** liq crystal **electroluminescent device**IT **Electroluminescent devices**

(conductive liq. crystal and org. electroluminescent element)

IT Liquid crystals

(conductive; **conductive** liq. crystal and org. electroluminescent element)

IT Electric current carriers

(mobility; **conductive** liq. crystal and org. electroluminescent element)IT 1047-16-1, Quinacridone 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 123847-85-8, .alpha.-NPD **332104-82-2**

RL: DEV (Device component use); USES (Uses)

KOROMA EIC1700

(conductive liq. crystal and org. electroluminescent element)

L36 ANSWER 7 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:427904 HCAPLUS

DOCUMENT NUMBER: 137:13052

TITLE: **Conductive** element and its production method

INVENTOR(S): Takiguchi, Takao; Tsuboyama, Akira; Okada, Shinjiro;

Moriyama, Takashi

PATENT ASSIGNEE(S): Canon Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002163926	A2	20020607	JP 2000-360214	20001127
PRIORITY APPLN. INFO.:			JP 1999-337902	A 19991129
			JP 2000-276772	A 20000912

AB The invention refers to a **conductive** component of a **electroluminescent device**, comprising the liq. crystal R-XABX'-R' [A,B = quinoline-2,6-diyl; X,X' = single bond, O, S, -OOC- or -OOC-; at least one of R, R' is H, F, Cl, Br, CF<sub>3</sub> or C1-20 straight chain or branched alkyl, and the other is C3-20 straight chain or branched alkyl] as a carrier transport layer in order to increase carrier mobility and carrier injection and obtain high **cond.**

IT 332104-82-2P 433685-95-1P 433685-96-2P

433685-98-4P 433686-00-1P, 6,6'-Bis(4-methylpentyl)-2,2'-

biquinoline 433686-02-3P, 6,6'-Bis(3-ethoxypropyl)-2,2'-

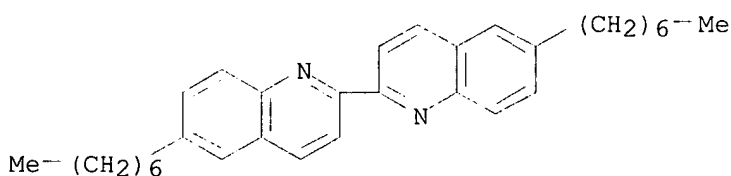
biquinoline

RL: DEV (Device component use); **SPN (Synthetic preparation);****PREP (Preparation);** USES (Uses)

(conductive element and prodn. method)

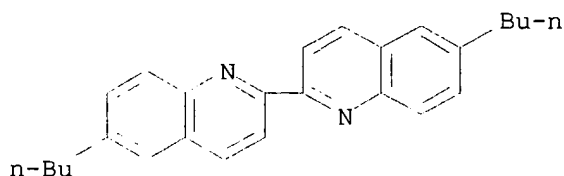
RN 332104-82-2 HCAPLUS

CN 2,2'-Biquinoline, 6,6'-diheptyl- (9CI) (CA INDEX NAME)



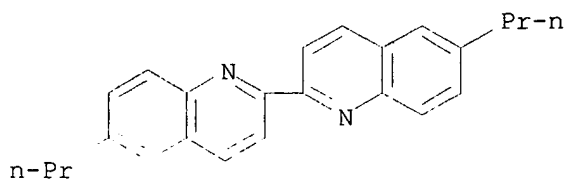
RN 433685-95-1 HCAPLUS

CN 2,2'-Biquinoline, 6,6'-dibutyl- (9CI) (CA INDEX NAME)

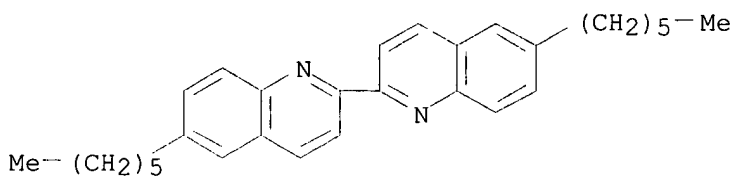




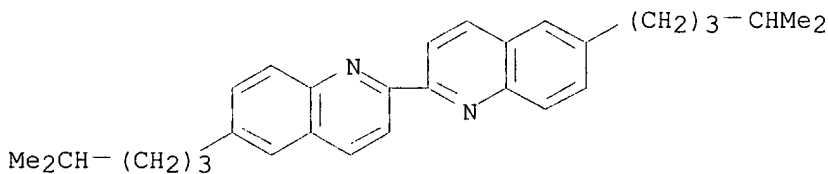
RN 433685-96-2 HCAPLUS  
CN 2,2'-Biquinoline, 6,6'-dipropyl- (9CI) (CA INDEX NAME)



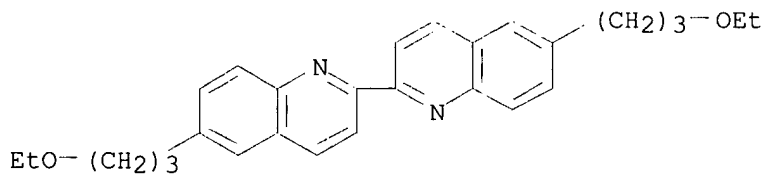
RN 433685-98-4 HCAPLUS  
CN 2,2'-Biquinoline, 6,6'-dihexyl- (9CI) (CA INDEX NAME)



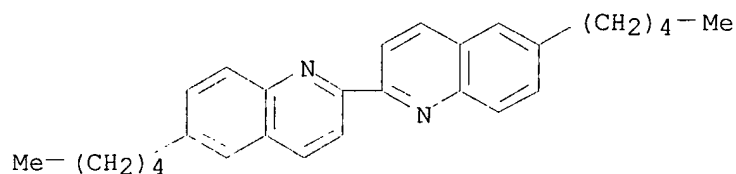
RN 433686-00-1 HCAPLUS  
CN 2,2'-Biquinoline, 6,6'-bis(4-methylpentyl)- (9CI) (CA INDEX NAME)



RN 433686-02-3 HCAPLUS  
CN 2,2'-Biquinoline, 6,6'-bis(3-ethoxypropyl)- (9CI) (CA INDEX NAME)



IT 433685-92-8P, 6,6'-Dipentyl-2,2'-biquinoline  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(conductive element and prodn. method)  
RN 433685-92-8 HCAPLUS  
CN 2,2'-Biquinoline, 6,6'-dipentyl- (9CI) (CA INDEX NAME)



IC ICM H01B001-12  
 ICS C07D215-12; C07D215-20; C07D215-36; C07D217-12; C07D217-24;  
 C07D237-28; C07D239-74; C07D241-42; C07D241-44; C07D471-04;  
 C07D475-00; C07D487-04; H05B033-14; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 75  
 ST **cond** carrier mobility transport liq crystal  
**electroluminescent device**  
 IT Electric **conductivity**  
**Electroluminescent devices**  
 Liquid crystals  
 (**conductive** element and prodn. method)  
 IT Electric current carriers  
 (mobility; **conductive** element and prodn. method)  
 IT Electric current carriers  
 (transport; **conductive** element and prodn. method)  
 IT **332104-82-2P 433685-95-1P 433685-96-2P**  
**433685-98-4P 433686-00-1P**, 6,6'-Bis(4-methylpentyl)-2,2'-  
 biquinoline **433686-02-3P**, 6,6'-Bis(3-ethoxypropyl)-2,2'-  
 biquinoline  
 RL: DEV (Device component use); **SPN (Synthetic preparation)**;  
**PREP (Preparation)**; USES (Uses)  
 (**conductive** element and prodn. method)  
 IT 104-13-2, 4-Butylaniline 109-67-1, 1-Pentene 122-31-6,  
 1,1,3,3-Tetraethoxy propane 580-16-5, 6-Hydroxyquinoline 628-32-0,  
 Propylethyl ether 691-37-2, 4-Methyl-1-pentene 2696-84-6,  
 4-Propylaniline 37181-39-8, Trifluoromethane sulfonate 37529-27-4,  
 p-Heptylaniline 433685-97-3, 6-Hexylquinoline  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (**conductive** element and prodn. method)  
 IT 7634-74-4P 7661-58-7P, 6-Propylquinoline 19060-08-3P,  
 .beta.-Ethoxyacrolein 173089-80-0P 283152-76-1P 433685-91-7P  
 433685-93-9P, 6-Pentylquinoline 433685-94-0P, 6-Decylquinoline  
 433685-99-5P, 6-(4-Methylpentyl)quinoline 433686-01-2P,  
 6-(3-Ethoxypropyl)quinoline  
 RL: RCT (Reactant); **SPN (Synthetic preparation)**; **PREP (Preparation)**; RACT  
 (Reactant or reagent)  
 (**conductive** element and prodn. method)  
 IT **433685-92-8P**, 6,6'-Dipentyl-2,2'-biquinoline  
 RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**  
 (**conductive** element and prodn. method)

L36 ANSWER 8 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:90411 HCAPLUS

DOCUMENT NUMBER: 136:143408

TITLE: Fluorocarbon-functionalized N-type thiophene

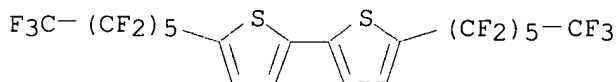
semiconductors prepared by gradient sublimation

INVENTOR(S): Marks, Tobin J.; Facchetti, Antonio; Sirringhaus,  
 Henning; Friend, Richard H.

KOROMA EIC1700

PATENT ASSIGNEE(S): Northwestern University, USA; University of Cambridge  
 SOURCE: PCT Int. Appl., 32 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002009201	A1	20020131	WO 2001-US41408	20010724
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2002053666	A1	20020509	US 2001-915210	20010724
PRIORITY APPLN. INFO.:			US 2000-220601P	P 20000724
AB	The fluorocarbon-functionalized polythiophenes, in particular, .alpha.,.omega.-diperfluorohexylsexithiophene DFH-6T can be straightforwardly prepd. in high yield and purified by gradient sublimation. Introduction of perfluorocarbon chains on the thiophene core affords enhanced thermal stability and volatility, and increased electron affinity vs. the F-free analog. Evapd. films of 1, e.g., behave as n-type semiconductors, and can be used to fabricate thin film transistors with FET mobilities on the order of .apprx. 0.01 cm <sup>2</sup> /Vs -- some of the highest reported to data for n-type org. semiconductors.			
IT	<b>393557-41-0P</b> RL: <b>SPN (Synthetic preparation)</b> ; TEM (Technical or engineered material use); <b>PREP (Preparation)</b> ; USES (Uses) (fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)			
RN	393557-41-0 HCAPLUS			
CN	2,2'-Bithiophene, 5,5'-bis(tridecafluorohexyl)- (9CI) (CA INDEX NAME)			



IC ICM H01L035-24  
 ICS H01L051-00; H01L051-40  
 CC 76-2 (Electric Phenomena)  
 Section cross-reference(s): 35, 38  
 ST polythiophene fluorocarbon functionalized **conductive** polymer  
 semiconductor; thin film transistor **electroluminescent**  
**device** polythiophene **conductor**  
 IT Bipolar transistors  
 Field effect transistors  
 Gate contacts  
 Integrated circuits  
 Semiconductor device fabrication  
 Thin film transistors  
 Vapor deposition process

(fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT Sublimation  
(gradient; fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT Perfluorocarbons  
RL: NUU (Other use, unclassified); USES (Uses)  
(polythiophene functional groups; fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT **Conducting polymers**  
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(polythiophenes; fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT **Electroluminescent devices**  
(thin-film; fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT 296765-27-0P  
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(DFH-6T; fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT 153634-16-3P  
RL: BYP (Byproduct); PREP (Preparation)  
(fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT 3480-11-3, 5-Bromo-2,2'-bithiophene 14221-01-3, Palladium tetrakis(triphenylphosphine) 171290-94-1, 5,5'-Bis(tributylstannyl)-2,2'-bithiophene 327630-34-2 327630-35-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT 1081-34-1DP, 2,2':5',2''-Terthiophene, trifluoromethyl-, functionalized-ethyl-derivs 113728-71-5DP, perfluoropropyl-, functionalized-alkyl-derivs **393557-41-0P** 393557-43-2P 393557-46-5P  
RL: **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)  
(fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT 7429-90-5, Aluminum, uses 7440-22-4, Silver, uses 7440-57-5, Gold, uses  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(source/drain contact material; fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

IT 78560-45-9  
RL: NUU (Other use, unclassified); USES (Uses)  
(substrate pre-treatment with; fluorocarbon-functionalized N-type thiophene semiconductors prepd. by gradient sublimation)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 9 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2001:636466 HCAPLUS

DOCUMENT NUMBER: 135:349769

TITLE: Tervalent **Conducting** Polymers with Tailor-Made Work Functions: Preparation, Characterization, and Applications as Cathodes in

**Electroluminescent Devices**

AUTHOR(S): Bloom, Corey J.; Elliott, C. Michael; Schroeder, Paul G.; France, C. Brian; Parkinson, Bruce A.  
 CORPORATE SOURCE: Department of Chemistry, Colorado State University, Fort Collins, CO, 80523, USA  
 SOURCE: Journal of the American Chemical Society (2001), 123(38), 9436-9442  
 CODEN: JACSAT; ISSN: 0002-7863  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

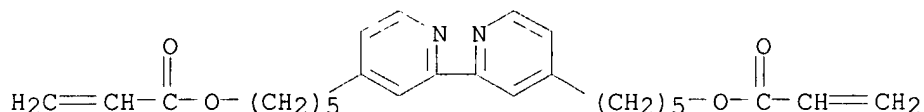
AB A series of **conducting** polymers have been prep'd. through thermal polymn. of transition-metal diimine complexes. The as-polymd. material is electrochem. converted into its formally zerovalent form. Due to the proximity of the half-wave potentials of the formal 1+/0 and 0/1- couples, there is substantial disproportionation of the redox sites at room temp., resulting in a **conductive** tervalent mixed-valent material. The redox processes that give rise to this mixed-valent material are predominantly ligand-based, and therefore are highly sensitive to substitution on the ligand periphery. Soln. redox chem. of the monomer can be used to accurately predict the work function of the corresponding zerovalent **conducting** polymer, which has been verified by UPS. Many of these materials have esp. low work functions (<3.6 eV) making them appropriate materials to use as cathode materials in org. **light-emitting** devices (OLEDs). Working examples of tris(8-hydroxyquinoline)aluminum(III)-based OLEDs have been fabricated using one of these polymers as a cathode.

IT **371255-40-2P**

RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); RCT (Reactant); **PREP (Preparation)**; PROC (Process); RACT (Reactant or reagent) (intermediate comp'd. in prepn. of transition-metal diimine complexes)

RN 371255-40-2 HCAPLUS

CN 2-Propenoic acid, [2,2'-bipyridine]-4,4'-diyl-di-5,1-pentanediy l ester (9CI) (CA INDEX NAME)

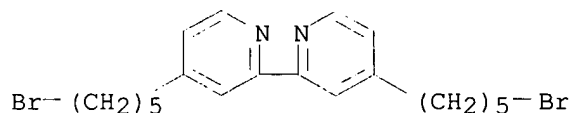


IT **371255-43-5**

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent) (starting reactive in synthesis of transition-metal diimine complexes used in prepn. of **conducting** polymers with tailor-made work functions)

RN 371255-43-5 HCAPLUS

CN 2,2'-Bipyridine, 4,4'-bis(5-bromopentyl)- (9CI) (CA INDEX NAME)



- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 38, 72, 76
- ST tervalent **conducting** polymers ruthenium diimine complexes  
**electroluminescence device**
- IT **Electroluminescent devices**  
(application of tervalent **conducting** polymers with tailor-made work functions in)
- IT Transition metal complexes  
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)  
(diimine; thermal polymn. of transition-metal diimine complexes in prepn. of **conducting** polymers with tailor-made work functions)
- IT Imines  
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)  
(diimines, transition metal complexes; thermal polymn. of transition-metal diimine complexes in prepn. of **conducting** polymers with tailor-made work functions)
- IT Cathodes  
(for **electroluminescent devices** from thermally polyimd. transition-metal diimine complexes)
- IT Electric current-potential relationship  
(of aluminum tris-quinoline based **electroluminescent device**)
- IT Half wave potential  
(of formal 1+/0 and 0/1- couples in **conductive** tervalent mixed-valent material)
- IT Cyclic voltammetry  
(of glassy carbon electrode modified with ruthenium contg. diimine complex polymer in acetonitrile contg. Bu4NPF6)
- IT Work function  
(prepn. and application of tervalent **conducting** polymers with tailor-made work functions in **electroluminescent devices**)
- IT **Conducting** polymers  
(tervalent **conducting** polymers with tailor-made work functions)
- IT Polymerization  
(thermal; thermal polymn. of transition-metal diimine complexes in prepn. of **conducting** polymers with tailor-made work functions)
- IT 210902-93-5P  
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)  
(**conducting** polymers with tailor-made work functions formed by thermal polymn.)
- IT 101144-64-3P  
RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)  
(**conducting** polymers with tailor-made work functions formed by thermal polymn. of)
- IT 7440-44-0, Glassy carbon, uses  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(glassy; cyclic voltammetry of glassy carbon electrode modified with

ruthenium contg. diimine complex polymer in acetonitrile contg.  
 Bu4NPF6)  
 IT 75-05-8, Acetonitrile, uses 3109-63-5, Tetrabutylammonium  
 hexafluorophosphate  
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (glassy; cyclic voltammetry of glassy carbon electrode modified with  
 ruthenium contg. diimine complex polymer in acetonitrile contg.  
 Bu4NPF6)  
 IT **371255-40-2P**  
 RL: PEP (Physical, engineering or chemical process); PNU (Preparation,  
 unclassified); PRP (Properties); RCT (Reactant); **PREP**  
**(Preparation)**; PROC (Process); RACT (Reactant or reagent)  
 (intermediate compd. in prepn. of transition-metal diimine complexes)  
 IT **371255-43-5**  
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC  
 (Process); RACT (Reactant or reagent)  
 (starting reactive in synthesis of transition-metal diimine complexes  
 used in prepn. of **conducting** polymers with tailor-made work  
 functions)  
 IT 2085-33-8  
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical  
 process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES  
 (Uses)  
 (thermal polymn. of transition-metal diimine complexes in prepn. of  
**conducting** polymers with tailor-made work functions)  
 IT 371255-42-4P  
 RL: PEP (Physical, engineering or chemical process); PNU (Preparation,  
 unclassified); PRP (Properties); RCT (Reactant); PREP (Preparation); PROC  
 (Process); RACT (Reactant or reagent)  
 (use of transition-metal diimine complexes in prepn. of  
**conducting** polymers with tailor-made work functions)  
 REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

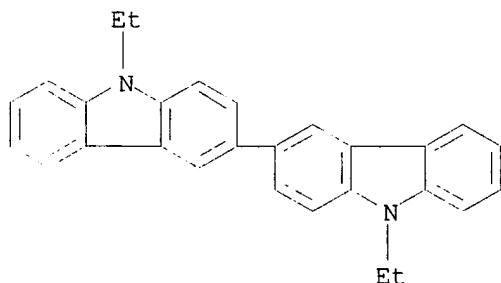
L36 ANSWER 10 OF 27 HCAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2001:587248 HCAPLUS  
 DOCUMENT NUMBER: 135:172861  
 TITLE: Biscarbazolylbiscarbazyl hole-transporting compound,  
 its manufacture, and **electroluminescent**  
**device** using it with high thermal stability  
 INVENTOR(S): Lee, Ji Hoon; Ki, In So; Cho, Song Woo; Che, Byong  
 Hoon  
 PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001220380	A2	20010814	JP 2000-121836	20000421
JP 3335985	B2	20021021		
US 2001046612	A1	20011129	US 2001-778859	20010208
US 6451461	B2	20020917		
PRIORITY APPLN. INFO.:			KR 2000-5814	A 20000208
OTHER SOURCE(S):		MARPAT 135:172861		

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\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

- AB The hole-transporting compd. is a 5,5'-bis(9H,9-carbazolyl)-N,N'-disubstituted-3,3'-bicarbazyl deriv. I (R = H, C1-12 aliph. alkyl, branched alkyl, cyclic alkyl, C4-14 arom group; R may be substituted with 1 or 2 alkoxy or amine). The **electroluminescent device** uses I as a hole-transporting agent and has a laminated structure of A/H/L/C, A/B/H/L/C, A/H/L/E/C, A/H/L/E/HS/C, or A/B/H/L/E/HS/C (A = anode, B = buffer layer, H = hole-transporting layer, L = **light-emitting** layer, E = electron-transporting layer, HS = hole-shielding layer, C = cathode). I is manufd. by (1) mixing CHCl<sub>3</sub> soln. of N-substituted carbazole with Fe chloride-dispersed CHCl<sub>3</sub> to prep. N,N'-disubstituted 3,3'-bicarbazyl II, (2) reacting II with halogens or halides to prep. N,N'-disubstituted 5,5'-dihalo-3,3'-bicarbazyl III (X = halo), and (3) reacting III with carbazole in arom. solvents. The device shows high efficiency and long service life.
- IT **20466-00-6P**  
 RL: PNU (Preparation, unclassified); RCT (Reactant); **PREP**  
**(Preparation)**; RACT (Reactant or reagent)  
 (manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- RN 20466-00-6 HCAPLUS
- CN 3,3'-Bi-9H-carbazole, 9,9'-diethyl- (9CI) (CA INDEX NAME)



- IC C07D209-88; C09K011-06; H05B033-14; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 27
- ST biscarbazolyl biscarbazyl hole transporting agent  
**electroluminescent device**; thermal stability carbazolyl  
 carbazolyl hole transporting EL
- IT **Electroluminescent devices**  
 (manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- IT 50926-11-9, ITO  
 RL: DEV (Device component use); USES (Uses)  
 (anode; manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)

KOROMA EIC1700



- IT 147-14-8, Copper phthalocyanine  
RL: DEV (Device component use); USES (Uses)  
(buffer layer; manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- IT 7429-90-5, Aluminum, uses  
RL: DEV (Device component use); USES (Uses)  
(cathode; manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- IT 38215-36-0, Coumarin 6  
RL: MOA (Modifier or additive use); USES (Uses)  
(dopant for **light-emitting** layer; manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- IT 7789-24-4, Lithium fluoride, uses  
RL: DEV (Device component use); USES (Uses)  
(hole-shielding layer, electron-transporting layer; manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- IT 2085-33-8, Alq3  
RL: DEV (Device component use); USES (Uses)  
(**light-emitting** layer; manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- IT 354135-64-1P 354135-69-6P  
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- IT **20466-00-6P** 57102-62-2P 57102-64-4P 57102-67-7P  
57102-86-0P 354135-75-4P  
RL: PNU (Preparation, unclassified); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)  
(manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)
- IT 86-28-2, N-Ethylcarbazole 86-74-8, Carbazole 1150-62-5, N-Phenylcarbazole  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(manuf. of biscarbazolylbiscarbazyl hole-transporting agent for **electroluminescent device** with high thermal stability)

L36 ANSWER 11 OF 27 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2001:569775 HCAPLUS  
DOCUMENT NUMBER: 135:122939  
TITLE: Purified bicarbazole-based homopolymer preparations, their preparation and use  
INVENTOR(S): Ades, Dominique; Siove, Alain; Cloutet, Eric  
PATENT ASSIGNEE(S): Therapeutiques Substitutives, Fr.  
SOURCE: Fr. Demande, 19 pp.  
CODEN: FRXXBL  
DOCUMENT TYPE: Patent  
LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

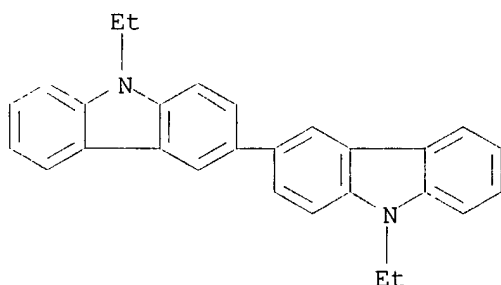
## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2800081	A1	20010427	FR 1999-13236	19991022

PRIORITY APPLN. INFO.: FR 1999-13236 19991022

AB Electroluminescent polymers, useful in LEDs and semiconductor devices, are prepd. by FeCl<sub>3</sub>-catalyzed coupling of biscarbazoles having their N atoms joined by an org. linking group in the presence of a N-substituted carbazole as chain terminator. For improved electroluminescence properties the polymer is purified by extn. to remove the chain terminator coupling product. Thus, a mixt. of 9,9'-octamethylenebiscarbazole 4.5, N-ethylcarbazole 2.25, and FeCl<sub>3</sub> 27 mmol in 150 mL CHCl<sub>3</sub> was stirred 3 h at room temp. under Ar, subjected to several cycles of treatment with 0.01M HCl and rinsing with H<sub>2</sub>O to neutrality, and pptd. with MeOH to give the desired polymer in quant. yield, contaminated with 9,9'-diethyl-3,3'-bicarbazole. The impurity was removed with 4:1 toluene-MeOH to provide a homopolymer with Mn 100,000, Mw/Mn .apprx.1.4, Tg .apprx.70.degree., absorption .lambda.max 300 nm and luminescence .lambda.max 430-450 nm.

IT **20466-00-6P**, 9,9'-Diethyl-3,3'-bicarbazole  
 RL: BYP (Byproduct); REM (Removal or disposal); **PREP (Preparation)**  
 ; PROC (Process)  
 (prepn. of purified bicarbazole-based homopolymer prepn.)  
 RN 20466-00-6 HCAPLUS  
 CN 3,3'-Bi-9H-carbazole, 9,9'-diethyl- (9CI) (CA INDEX NAME)



IC ICM C08G073-06  
 ICS H01L033-00  
 CC 35-7 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 73  
 ST biscarbazole homopolymer electroluminescent  
 IT **Electroluminescent devices**  
 Semiconductor materials  
 (prepn. of purified bicarbazole-based homopolymer prepn. for use in)  
 IT **20466-00-6P**, 9,9'-Diethyl-3,3'-bicarbazole  
 RL: BYP (Byproduct); REM (Removal or disposal); **PREP (Preparation)**  
 ; PROC (Process)  
 (prepn. of purified bicarbazole-based homopolymer prepn.)  
 IT 7705-08-0, Ferric chloride, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (prepn. of purified bicarbazole-based homopolymer prepn.)  
 IT 166256-63-9DP, (chloropentyl)carbazole-terminated 350715-88-7DP,  
 ethylcarbazole-terminated 350715-92-3DP, Me carbazolehexanoate-  
 terminated

KOROMA EIC1700

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(prepn. of purified bicarbazole-based homopolymer prepns.)

L36 ANSWER 12 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2001:414804 HCAPLUS

DOCUMENT NUMBER: 135:26697

TITLE: **Conductive** device components

INVENTOR(S): Moriyama, Takashi; Okada, Shinjiro; Tsuboyama, Akira; Takiguchi, Takao

PATENT ASSIGNEE(S): Canon Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001155865	A2	20010608	JP 1999-337901	19991129
PRIORITY APPLN. INFO.:			JP 1999-337901	19991129

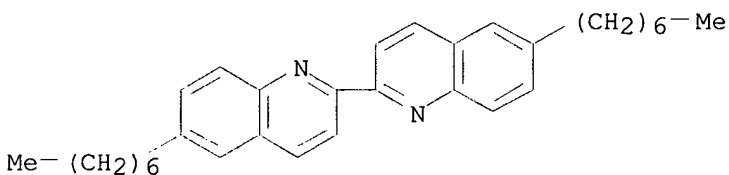
AB The **devices**, typically of an **electroluminescent** laminate comprise: an ITO electrode, an .alpha.-NPD hole transport, an Alq3 phosphor, a (supercooled) liq. crystal, and an Al Li/Al electrode layer.

IT **332104-82-2**

RL: DEV (Device component use); USES (Uses)  
(**conductive** device components)

RN 332104-82-2 HCAPLUS

CN 2,2'-Biquinoline, 6,6'-diheptyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST electroluminescent liq crystal laminate

IT Electrodes

Hole transport

Laminated materials

Liquid crystals

Luminescence, **electroluminescence**

Phosphors

Supercooling

(**conductive device** components)

IT Organic compounds, uses

RL: DEV (Device component use); USES (Uses)  
(**conductive** device components)

IT 2085-33-8, Tris(8-quinolinolato)aluminum 7429-90-5, Aluminum, uses  
7439-93-2, Lithium, uses 50926-11-9, ITO 60137-90-8 123847-85-8,

KOROMA EIC1700

.alpha.-NPD 332104-82-2

RL: DEV (Device component use); USES (Uses)  
(**conductive** device components)

L36 ANSWER 13 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2001:396581 HCAPLUS

DOCUMENT NUMBER: 135:12200

TITLE: Liquid crystal **device** functioning as organic  
**electroluminescence device**INVENTOR(S): Tsuboyama, Akira; Okada, Shinjiro; Takiguchi, Takao;  
Moriyama, Takashi; Kamatani, Jun

PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan

SOURCE: Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1104036	A2	20010530	EP 2000-310536	20001128
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002164177	A2	20020607	JP 2000-358669	20001127
PRIORITY APPLN. INFO.:			JP 1999-337274	A 19991129
			JP 2000-278743	A 20000913

OTHER SOURCE(S): MARPAT 135:12200

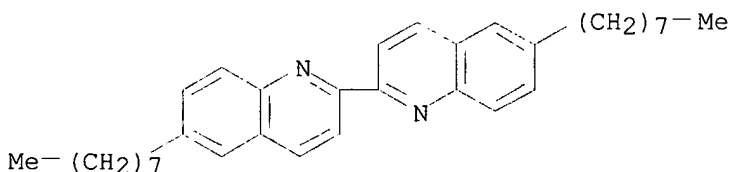
AB A liq. crystal **device** includes an org. **EL device** and formed of a pair of electrodes and a plurality of layers disposed between the electrodes and includes at least one liq. crystal layer. The liq. crystal layer comprises a liq. crystal compn. having an electronic carrier-transporting function and comprises at least two compds. including at least one electron-donating compd. or electron-accepting compd. having n-electron conjugated structure. As a result of doping the liq. crystal layer with the electron-donating or electron-accepting compd., the current **conduction** performance of the liq. crystal layer is improved, presumably due to generation of free carriers. A functional device including the liq. crystal device can be improved as a whole.

IT 342395-27-1

RL: DEV (Device component use); USES (Uses)  
(liq. crystal; liq. crystal **device** functioning as org.  
**electroluminescence device**)

RN 342395-27-1 HCAPLUS

CN 2,2'-Biquinoline, 6,6'-dioctyl- (9CI) (CA INDEX NAME)



IC ICM H01L051-20

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)

KOROMA EIC1700

ST org **electroluminescence** liq crystal hybrid **device**  
 IT Liquid crystal displays  
     (liq. crystal **device** functioning as org.  
     **electroluminescence device** in relation to)  
 IT **Electroluminescent devices**  
     (org.; liq. crystal **device** functioning as org.  
     **electroluminescence device**)  
 IT Liquid crystals  
     (smectic; liq. crystal **device** functioning as org.  
     **electroluminescence device**)  
 IT 1518-16-7, Tetracyanoquinodimethane  
     RL: DEV (Device component use); USES (Uses)  
     (electron-accepting dopant; liq. crystal **device** functioning  
     as org. **electroluminescence device**)  
 IT 31366-25-3, Tetrathiafulvalene  
     RL: DEV (Device component use); USES (Uses)  
     (electron-donating dopant; liq. crystal **device** functioning as  
     org. **electroluminescence device**)  
 IT 123847-85-8, .alpha.-NPD  
     RL: DEV (Device component use); USES (Uses)  
     (hole-transporting layer; liq. crystal **device** functioning as  
     org. **electroluminescence device**)  
 IT 60137-90-8 70351-86-9 342395-26-0 **342395-27-1**  
     RL: DEV (Device component use); USES (Uses)  
     (liq. crystal; liq. crystal **device** functioning as org.  
     **electroluminescence device**)  
 IT 2085-33-8, Alq3  
     RL: DEV (Device component use); USES (Uses)  
     (luminescence layer; liq. crystal **device** functioning as org.  
     **electroluminescence device**)

L36 ANSWER 14 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2001:246499 HCAPLUS

DOCUMENT NUMBER: 134:273332

TITLE: **Conductive liquid crystal device,**  
 and organic **electroluminescence**  
**device**

INVENTOR(S): Okada, Shinjiro; Mizutani, Hidemasa; Tsuboyama, Akira;  
 Takiguchi, Takao; Moriyama, Takashi

PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan

SOURCE: Eur. Pat. Appl., 13 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1089596	A2	20010404	EP 2000-308543	20000928
EP 1089596	A3	20030205		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001167887	A2	20010622	JP 2000-289772	20000925

PRIORITY APPLN. INFO.: JP 1999-273879 A 19990928

AB **Conductive** liq. crystal **devices**, esp. org.  
**electroluminescent devices**, are described which comprise  
 a pair of electrodes, a carrier-transporting layer disposed in contact  
 with one of the electrodes and comprising a **conductive** liq.

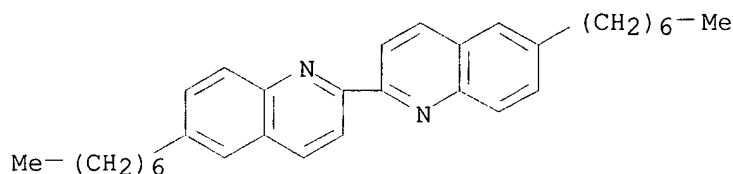
crystal having a .pi.-electron resonance structure, a protective layer disposed in contact with the carrier-transporting layer and having a carrier-transporting function, and an (e.g., electroluminescent) org. layer disposed in contact with the protective layer, resp. disposed between the electrodes. The protective layer acts to prevent deterioration, such as the occurrence of mol. assocn. (e.g., exciplex formation), at the boundary between the carrier-transporting layer and the org. layer, so that a sufficient luminescence can be attained at a lower voltage to improve the durability of the device.

IT **332104-82-2**

RL: DEV (Device component use); USES (Uses)  
(org. **electroluminescent devices** and other org. **devices** employing **conductive** liq. crystal carrier-transporting layers)

RN 332104-82-2 HCAPLUS

CN 2,2'-Biquinoline, 6,6'-diheptyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

ICS H01L051-20

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 75, 76

ST **electroluminescent org device conductive liq**  
crystal carrier transporting layer

IT Liquid crystals

(discotic; org. **electroluminescent devices** and other org. **devices** employing **conductive** liq. crystal carrier-transporting layers)

IT **Electroluminescent devices**

Semiconductor devices

(org.; org. **electroluminescent devices** and other org. **devices** employing **conductive** liq. crystal carrier-transporting layers)

IT Liquid crystals

(smectic; org. **electroluminescent devices** and other org. **devices** employing **conductive** liq. crystal carrier-transporting layers)

IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 4733-39-5,  
2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 7429-90-5, Aluminum, uses  
12723-72-7 50926-11-9, Indium tin oxide 70351-86-9,  
Hexakis(hexyloxy)triphenylene 123847-85-8, .alpha.-NPD 147811-57-2  
332035-22-0 **332104-82-2**

RL: DEV (Device component use); USES (Uses)

(org. **electroluminescent devices** and other org. **devices** employing **conductive** liq. crystal carrier-transporting layers)

IT 198-55-0, Perylene 51325-91-8, DCM

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(org. **electroluminescent devices** and other org.

**devices** employing **conductive** liq. crystal  
carrier-transporting layers)

L36 ANSWER 15 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2001:185143 HCAPLUS

DOCUMENT NUMBER: 134:245547

TITLE: **Conductive** organic compound having a  
pi-electron resonance structure

INVENTOR(S): Okada, Shinjiro; Nishida, Naoya; Tsuboyama, Akira;  
Moriyama, Takashi

PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan

SOURCE: Eur. Pat. Appl., 21 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1083613	A2	20010314	EP 2000-307698	20000907
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001167888	A2	20010622	JP 2000-270884	20000907
PRIORITY APPLN. INFO.:			JP 1999-255007	A 19990909
			JP 1999-273878	A 19990928

AB A **conductive** org. compd. device structure suitable for  
constituting an electronic **device**, such as an org. **EL**  
**device**, is formed by including a pair of oppositely spaced  
electrodes, and a carrier transporting layer disposed between the  
electrodes and in contact with 1 of the electrodes; in which the carrier  
transporting layer comprises a **conductive** org. compd. having a  
.pi.-electron resonance structure in its mol. In the device, the  
.pi.-electron resonance structure plane of the **conductive** org.  
compd. in the carrier transporting layer is aligned substantially parallel  
to surfaces of the electrodes. The **conductive** org. compd. is  
preferably a **conductive** liq. crystal, such as a discotic liq.  
crystal or a smectic liq. crystal, and a layer thereof is included in the  
device, preferably by vacuum deposition.

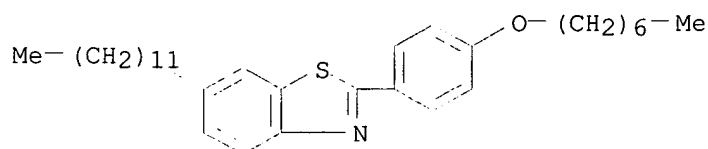
IT **188754-25-8**

RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PROC (Process); USES (Uses)

(smectic liq. crystal; **conductive** org. compd. having a  
pi-electron resonance structure in org. **electroluminescence**  
**devices**)

RN 188754-25-8 HCAPLUS

CN Benzothiazole, 6-dodecyl-2-[4-(heptyloxy)phenyl]- (9CI) (CA INDEX NAME)



IC ICM H01L051-20

CC 75-11 (Crystallography and Liquid Crystals)

Section cross-reference(s): 76

KOROMA EIC1700

- ST **conductive** liq crystal org **electroluminescence device**
- IT Microelectronic devices  
(**conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT Liquid crystals  
(discotic; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT Alkali metals, processes  
Alkaline earth metals  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(electrode materials; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT Sensors  
(org., photo-; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT **Electroluminescent devices**  
Photoconductors  
Semiconductor devices  
Thin film transistors  
(org.; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT Liquid crystals  
(smectic; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT Vapor deposition process  
(vacuum; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT 69079-52-3, Triphenylene, 2,3,6,7,10,11-hexakis(pentyloxy)- 70351-86-9, Triphenylene, 2,3,6,7,10,11-hexakis(hexyloxy)-  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(**conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT 70351-85-8 90430-82-3 193627-31-5, Cyclohexanecarboxylic acid-3,6,7,10,11-pentakispentyloxytriphenylen-2-ylester  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(discotic liq. crystal; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence devices**)
- IT 1312-43-2, Indium oxide 1314-13-2, Zinc oxide, processes 1332-29-2, Tin oxide 1335-23-5, Copper iodide 7429-90-5, Aluminum, processes 7439-93-2, Lithium, processes 7439-95-4, Magnesium, processes 7440-06-4, Platinum, processes 7440-09-7, Potassium, processes 7440-23-5, Sodium, processes 7440-57-5, Gold, processes 11099-19-7 11135-81-2 12185-56-7, Cadmium tin oxide (Cd<sub>2</sub>SnO<sub>4</sub>) 12798-95-7, Aluminum alloy, Al,Li 37254-60-7, Aluminum alloy, Al,Cu,Si 37271-44-6, Silver alloy, Ag,Mg 157682-41-2, Indium alloy, In,Mg  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(electrode materials; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence**)



**devices)**

IT 50926-11-9, ITO

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(hole-injecting anode; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence****devices)**

IT 91-64-5, Coumarin 198-55-0, Perylene 846-63-9, .alpha.-NPO 1047-16-1, Quinacridone 2085-33-8, Alq3 51325-91-8, DCM 123847-85-8, .alpha.-NPD

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(luminescent org. layer; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence****devices)**

IT 188754-25-8 219683-04-2, Naphthalene, 2-butoxy-6-(4-octylphenyl)-

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(smectic liq. crystal; **conductive** org. compd. having a pi-electron resonance structure in org. **electroluminescence****devices)**

L36 ANSWER 16 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2000:782810 HCAPLUS

DOCUMENT NUMBER: 133:357083

TITLE: Organic electroluminescent component

INVENTOR(S): Nakatsuka, Masakatsu; Shimamura, Takehiko

PATENT ASSIGNEE(S): Mitsui Chemical Industry Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 46 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

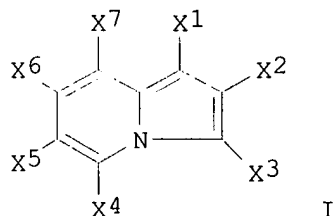
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000311787	A2	20001107	JP 2000-41097	20000218
PRIORITY APPLN. INFO.:			JP 1999-42856	A 19990222
OTHER SOURCE(S):		MARPAT 133:357083		

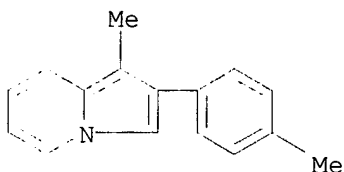
GI



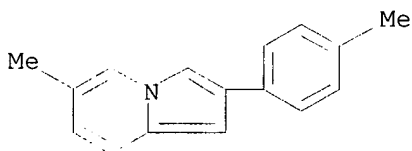
AB The invention refers to an org. electroluminescent component comprising an indolizine compd. I [X1-7 = H, halo, straight chain or branched alkyl, straight chain, branched or ring alkoxy, (un)substituted aryl, aralkyl, aryloxy, or alkenyl; where X1,2, X2,3, X3,4, X4,5, X5,6 and X6,7 can be joined to form a ring] as a **conductor**.

KOROMA EIC1700

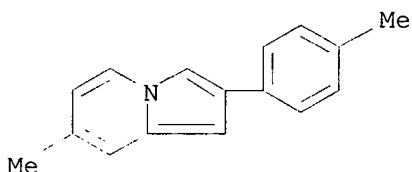
IT 92962-24-8 304892-16-8 304892-22-6  
 305324-15-6  
 RL: DEV (Device component use); USES (Uses)  
 (org. electroluminescent component)  
 RN 92962-24-8 HCAPLUS  
 CN Indolizine, 1-methyl-2-(4-methylphenyl)- (9CI) (CA INDEX NAME)



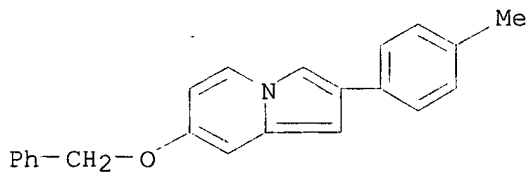
RN 304892-16-8 HCAPLUS  
 CN Indolizine, 6-methyl-2-(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 304892-22-6 HCAPLUS  
 CN Indolizine, 7-methyl-2-(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 305324-15-6 HCAPLUS  
 CN Indolizine, 2-(4-methylphenyl)-7-(phenylmethoxy)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST org **electroluminescent device** indolizine  
 IT **Electroluminescent devices**  
 (org. **electroluminescent** component)

IT 274-40-8D, Indolizine, derivs. 769-89-1 1019-12-1 1035-41-2  
 1125-77-5 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 7439-95-4,  
 Magnesium, uses 7440-22-4, Silver, uses 7496-81-3 7496-82-4  
 7607-48-9 16511-54-9 21812-61-3 24601-13-6 25379-20-8 34844-68-3  
 34844-69-4 34844-70-7 36784-97-1 38215-36-0, Coumarin 6  
 50926-11-9, ITO 51039-56-6 51325-05-4, Poly(thiophene-2,5-diyl) .  
 51325-91-8 59647-46-0 65181-78-4 67000-14-0 67000-16-2  
 67000-20-8 70120-96-6 75248-28-1 75248-30-5 76949-58-1  
 77425-55-9 **92962-24-8** 107915-11-7 107917-55-5 108539-96-4  
 109746-87-4 123847-85-8 124729-98-2 138372-67-5 146162-52-9  
 150405-69-9 160663-15-0 160663-20-7 169210-38-2 304885-92-5  
 304885-97-0 304885-98-1 304886-00-8 304891-42-7 304891-43-8  
 304892-11-3 **304892-16-8 304892-22-6** 304892-30-6  
 304892-46-4 304892-47-5 304892-48-6 304892-49-7 304892-52-2  
 304892-53-3 304893-64-9 304893-89-8 304894-24-4 305324-08-7  
**305324-15-6** 305324-30-5 305324-62-3 305326-42-5  
 305328-28-3 305328-31-8 305328-33-0 305328-34-1 305328-44-3  
 305330-61-4 305331-82-2 305331-85-5 305331-88-8  
 RL: DEV (Device component use); USES (Uses)  
 (org. electroluminescent component)

L36 ANSWER 17 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1999:558353 HCAPLUS

DOCUMENT NUMBER: 131:322984

TITLE: Poly(alkyl thiophene-3-carboxylates). Synthesis,  
 properties and electroluminescence studies of  
 polythiophenes containing a carbonyl group directly  
 attached to the ring

AUTHOR(S): Pomerantz, Martin; Cheng, Yang; Kasim, Ramesh K.;  
 Elsenbaumer, Ronald L.

CORPORATE SOURCE: Department of Chemistry and Biochemistry, Center for  
 Advanced Polymer Research, The University of Texas at  
 Arlington, Arlington, TX, 76019-0065, USA

SOURCE: Journal of Materials Chemistry (1999), 9(9), 2155-2163  
 CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The use of 4 equiv. of freshly prepd. Cu powder in the prepn. of  
 poly(3-hexyloxycarbonylthiophene-2,5-diyl) (I) and poly(3-  
 octyloxycarbonylthiophene-2,5-diyl) (II) from hexyl and octyl  
 2,5-dibromothiophene-3-carboxylate, resp., provides polymers with about  
 double the mol. wt. of polymers prepd. using 3 equiv of Cu powder. I and  
 II had no.-av. mol. wt., .hivin.Mn, 6700 and 9400, resp., a  
 polydispersity, .hivin.Mw/.hivin.Mn, of 2.5 and 3.2, resp., .lambda.max  
 for fluorescence emission 600 nm and 610 nm, resp., and .lambda.max for  
 electroluminescence 600 nm and 615 nm, resp. The 1H NMR spectra required  
 that pentads be considered to explain the spectra. That is the four  
 nearest neighbors to a given ring influence the 1H NMR spectrum.  
 Electroluminescence efficiencies of 0.016% and 0.018% were obsd. for  
 devices made from I and II, resp. A bilayer device of  
 ITO/poly(3-octylthiophene)/II/Al emitted at 646 nm, the same wavelength  
 where poly(3-octylthiophene) itself emits. The efficiency was low but was  
 an order of magnitude greater than for poly(3-octylthiophene) itself.  
 Regioregular (HH-TT) poly(4,4'-bis(hexyloxycarbonyl)[2,2'-bithiophene]-  
 5,5'-diyl) (III) and poly(4,4'-bis(octyloxycarbonyl)[2,2'-bithiophene]-  
 5,5'-diyl) (IV) were also prepd. via the Ullmann reaction and provided  
 polymers having .hivin.Mn 7900 and 11,000, resp. Films of III and IV were  
 yellow in color and showed .lambda.max 377 nm and 381 nm, resp., about

55-80 nm blue shifted compared with I and II. This is due to the large rotational barrier in the HH dyads which reduces the effective conjugation length in III and IV. III and IV showed bright fluorescence and electroluminescence with emission of yellow light. Electroluminescence efficiencies were 8.5 .times. 10-3% and 4.7 .times. 10-3%, resp.

IT 204654-78-4P 204654-79-5P

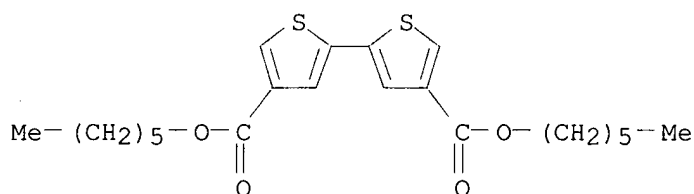
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(prepn. and bromination of; in synthesis of monomer for prepn. of polythiophenes contg. carbonyl group directly attached to ring)

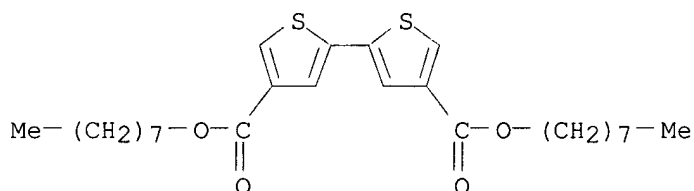
RN 204654-78-4 HCAPLUS

CN [2,2'-Bithiophene]-4,4'-dicarboxylic acid, dihexyl ester (9CI) (CA INDEX NAME)



RN 204654-79-5 HCAPLUS

CN [2,2'-Bithiophene]-4,4'-dicarboxylic acid, dioctyl ester (9CI) (CA INDEX NAME)



CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 73

ST polyalkyl thiophenecarboxylate prepn property; thiophenecarboxylate polymer Ullman coupling; electroluminescence fluorescence polythiophene; bithiophenedicarboxylate polymer Ullman coupling; **light emitting** diode polyalkyl thiophenecarboxylate

IT Polymerization

(Ullmann coupling of alkyl dibromthiophenecarboxylates and dialkyl dibromobithiophenedicarboxylates)

IT Polymers, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(polythiophenes; synthesis, properties and electroluminescence of polythiophenes contg. carbonyl group directly attached to ring)

IT Electric **conductivity**

**Electroluminescent devices**

Fluorescence

Luminescence

(synthesis, properties and **electroluminescence** of

polythiophenes contg. carbonyl group directly attached to ring)

IT 88-13-1, 3-Thiophenecarboxylic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(bromination of; in synthesis of monomers for prepn. of polythiophenes  
contg. carbonyl group directly attached to ring)

IT 204654-83-1P 204654-84-2P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(for prepn. of polythiophenes contg. carbonyl group directly attached  
to ring)

IT 76360-43-5P 88770-19-8P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(in model reaction for regiochem. study in synthesis of polythiophenes  
contg. carbonyl group directly attached to ring)

IT 204654-76-2P  
RL: PEP (Physical, engineering or chemical process); SPN (Synthetic  
preparation); PREP (Preparation); PROC (Process)  
(intermediate; in synthesis of monomer for prepn. of polythiophenes  
contg. carbonyl group directly attached to ring)

IT 248278-63-9P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(intermediate; in synthesis of monomer for prepn. of polythiophenes  
contg. carbonyl group directly attached to ring)

IT 100523-84-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(intermediate; in synthesis of monomers for prepn. of polythiophenes  
contg. carbonyl group directly attached to ring)

IT 204654-80-8P 204654-81-9P  
RL: PEP (Physical, engineering or chemical process); SPN (Synthetic  
preparation); PREP (Preparation); PROC (Process)  
(monomer; for prepn. of polythiophenes contg. carbonyl group directly  
attached to ring)

IT 204654-78-4P 204654-79-5P  
RL: RCT (Reactant); **SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)**  
(prepn. and bromination of; in synthesis of monomer for prepn. of  
polythiophenes contg. carbonyl group directly attached to ring)

IT 111-27-3, 1-Hexanol, reactions 111-87-5, 1-Octanol, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reactant; in synthesis of monomer for prepn. of polythiophenes contg.  
carbonyl group directly attached to ring)

IT 89280-91-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with Rieke zinc; as model of regiochem. in synthesis of  
polythiophenes contg. carbonyl group directly attached to ring)

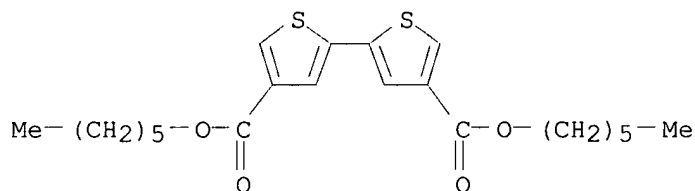
IT 165549-19-9P 171172-21-7P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)  
(synthesis, properties and electroluminescence of polythiophenes contg.  
carbonyl group directly attached to ring)

IT 165549-18-8P 171172-22-8P 204654-82-0P 204654-85-3P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(synthesis, properties and electroluminescence of polythiophenes contg.  
carbonyl group directly attached to ring)

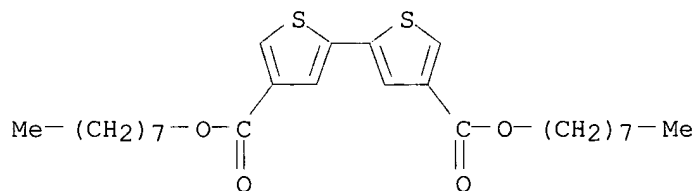
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 18 OF 27 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1999:459302 HCAPLUS  
DOCUMENT NUMBER: 131:200160  
TITLE: Synthesis and properties of regioregular poly(dialkyl

AUTHOR(S): [2,2'-bithiophene]-5,5'-diyl-4,4'-dicarboxylates)  
 Pomerantz, Martin; Cheng, Yang; Kasim, Ramesh K.;  
 Elsenbaumer, Ronald L.  
 CORPORATE SOURCE: Center for Advanced Polymer Research, Department of  
 Chemistry and Biochemistry, The University of Texas at  
 Arlington, Arlington, TX, 76019-0065, USA  
 SOURCE: Synthetic Metals (1999), 101(1-3), 162-165  
 CODEN: SYMEDZ; ISSN: 0379-6779  
 PUBLISHER: Elsevier Science S.A.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Regioregular (HH-TT) polythiophenes with electron withdrawing ester groups  
 attached directly to the ring, namely poly(dihexyl and dioctyl  
 [2,2'-bithiophene]-5,5'-diyl-4,4'-dicarboxylate) have been prep'd. via the  
 Ullmann reaction of the corresponding monomers with copper in DMF. No.  
 av. mol. wts. (GPC/polystyrene stds.) of 7,900 and 11,000 resp. were  
 obtained. Cast films of 2 polymers were yellow in color and showed UV-vis  
 absorption at 377 and 381 nm resp., about 55-80 nm blue shifted compared  
 with regiorandom poly(alkyl thiophene-3-carboxylates). Quantum mech.  
 calcns. showed that the head-to-head dyads induce regular interruption of  
 the coplanarity of the polymer backbone. Both polymers showed bright  
 fluorescence and electroluminescence with emission of yellow light.  
 External electroluminescence efficiencies were 8.5 and 4.7 .times. 10<sup>-3</sup> %,  
 resp.  
 IT 204654-78-4P 204654-79-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (monomer precursor; synthesis and properties of regioregular  
 poly(dialkyl bithiophenediylldicarboxylates))  
 RN 204654-78-4 HCAPLUS  
 CN [2,2'-Bithiophene]-4,4'-dicarboxylic acid, dihexyl ester (9CI) (CA INDEX  
 NAME)



RN 204654-79-5 HCAPLUS  
 CN [2,2'-Bithiophene]-4,4'-dicarboxylic acid, dioctyl ester (9CI) (CA INDEX  
 NAME)



CC 35-5 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 36, 73

KOROMA EIC1700

ST polydihexyl bithiophenediylldicarboxylate prepn electroluminescence; chain structure polydialkyl bithiophenediylldicarboxylate; polydioctyl bithiophenediylldicarboxylate prepn fluorescence

IT Polymer chains  
(configuration; synthesis and properties of regioregular poly(dialkyl bithiophenediylldicarboxylates))

IT **Electroluminescent devices**  
Fluorescence  
Luminescence, electroluminescence  
(synthesis and properties of regioregular poly(dialkyl bithiophenediylldicarboxylates))

IT 88-13-1, 3-Thiophenecarboxylic acid  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(monomer precursor; synthesis and properties of regioregular poly(dialkyl bithiophenediylldicarboxylates))

IT 24287-95-4P, 2-Bromo-3-thiophenecarboxylic acid 204654-76-2P, Hexyl 2-bromo-3-thiophenecarboxylate 204654-77-3P **204654-78-4P**  
**204654-79-5P**  
RL: RCT (Reactant); **SPN (Synthetic preparation); PREP (Preparation);** RACT (Reactant or reagent)  
(monomer precursor; synthesis and properties of regioregular poly(dialkyl bithiophenediylldicarboxylates))

IT 204654-80-8P 204654-81-9P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; synthesis and properties of regioregular poly(dialkyl bithiophenediylldicarboxylates))

IT 91570-39-7 160309-89-7 204654-84-2 204654-85-3 226381-36-8 226381-37-9 226381-38-0 226381-39-1  
RL: PRP (Properties)  
(quantum mech. calcn. of structures of bithiophenes as models for regioregular poly(dialkyl bithiophenediylldicarboxylates))

IT 204654-82-0P 204654-83-1P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(synthesis and properties of regioregular poly(dialkyl bithiophenediylldicarboxylates))

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 19 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1999:113901 HCAPLUS

DOCUMENT NUMBER: 130:160352

TITLE: **Electroluminescent device**

INVENTOR(S): Nuesch, Frank Alain; Rotzinger, Francois; Si-Ahmed, Lynda; Zuppiroli, Libero

PATENT ASSIGNEE(S): Ecole Polytechnique Federale de Lausanne, Switz.

SOURCE: PCT Int. Appl., 57 pp.  
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9907028	A1	19990211	WO 1998-CH324	19980731
W: JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				

EP 1012892 A1 20000628 EP 1998-934728 19980731  
 R: CH, DE, FR, GB, LI, NL  
 JP 2001512145 T2 20010821 JP 2000-505659 19980731  
 PRIORITY APPLN. INFO.: CH 1997-1844 A 19970731  
 WO 1998-CH324 W 19980731

OTHER SOURCE(S): MARPAT 130:160352

AB The invention concerns a **electroluminescent device** with a multilayer structure comprising: (i) a 1st electrode including a layer, consisting of a transparent or translucent **conductive** material selected among metal oxides and metal nitrides, said layer being deposited on a transparent support, consisting of a glass, Si, alumina plate, or a polymer sheet; (ii) a 2nd electrode; (iii) a layer, arranged between the 2 electrodes, comprising a semiconductor and electroluminescent solid org. substance, said layer being optionally bordered with 1 or several intermediate layers, consisting of electrocatalysts; and (iv) a layer with monomol. structure, arranged between the layer consisting of the **conductive** material and the layer consisting of the electroluminescent substance. Said device is further characterized in that said layer consists of a dipolar org. compd. whereof the structure has an electronic system .pi., a functional group, vicinal or not of the electronic system .pi.. Also, the dipolar org. compd. is chem. bound by the functional group to the **conductive** material and has chem. affinity for the org. electroluminescent substance.

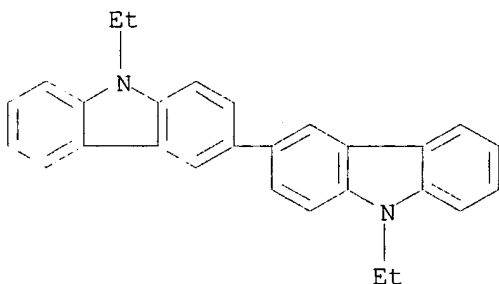
IT **20466-00-6**, N,N'-Diethyl-3,3'-bicarbazole **101697-53-4**

RL: DEV (Device component use); USES (Uses)

(**electroluminescent device** with multilayer structure and ruthenium org. complex, org. derivs., and hydroxyquinoline aluminum)

RN 20466-00-6 HCAPLUS

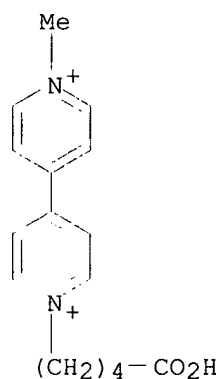
CN 3,3'-Bi-9H-carbazole, 9,9'-diethyl- (9CI) (CA INDEX NAME)



RN 101697-53-4 HCAPLUS

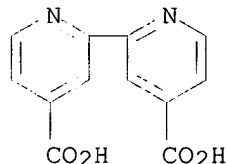
CN 4,4'-Bipyridinium, 1-(4-carboxybutyl)-1'-methyl-, dibromide (9CI) (CA INDEX NAME)





2 Br<sup>-</sup>

IT **6813-38-3**, 2,2'-Bipyridyl-4,4'-dicarboxylic acid  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (electroluminescent device with multilayer  
 structure and ruthenium org. complex, org. derivs., and  
 hydroxyquinoline aluminum)  
 RN 6813-38-3 HCAPLUS  
 CN [2,2'-Bipyridine]-4,4'-dicarboxylic acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L051-20  
 ICS H05B033-20  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 78  
 ST **electroluminescent device** multilayer ruthenium complex  
 hydroxyquinoline aluminum; metal nitride oxide **electroluminescent**  
**device** multilayer; electrocatalyst **electroluminescent**  
**device** multilayer ruthenium complex hydroxyquinoline aluminum;  
 glass **electroluminescent device** multilayer ruthenium  
 complex hydroxyquinoline aluminum; polymer **electroluminescent**  
**device** multilayer ruthenium complex hydroxyquinoline aluminum;  
 monolayer **electroluminescent device** multilayer  
 ruthenium complex hydroxyquinoline aluminum; ITO  
**electroluminescent device** multilayer ruthenium complex  
 hydroxyquinoline aluminum; electrode **electroluminescent**  
**device** multilayer ruthenium complex hydroxyquinoline aluminum;  
 functional group **electroluminescent device** multilayer  
 ruthenium org complex  
 IT Catalysts  
 (electrocatalysts; **electroluminescent device** with

KOROMA EIC1700

multilayer structure and ruthenium org. complex, org. derivs., and hydroxyquinoline aluminum)

IT Dipole moment  
Electrodes  
**Electroluminescent devices**  
Functional groups  
Monolayers  
(**electroluminescent device** with multilayer structure and ruthenium org. complex, org. derivs., and hydroxyquinoline aluminum)

IT Glass, uses  
Nitrides  
Oxides (inorganic), uses  
Polymers, uses  
RL: DEV (Device component use); USES (Uses)  
(**electroluminescent device** with multilayer structure and ruthenium org. complex, org. derivs., and hydroxyquinoline aluminum)

IT HOMO (molecular orbital)  
LUMO (molecular orbital)  
(ruthenium bipyridyl complex isothiocyanate salt HOMO and LUMO in relation to dipole moment)

IT 62-23-7, 4-Nitrobenzoic acid 824-77-1, 4-Carboxy-1-methylpyridinium betaine 2085-33-8, Hydroxyquinoline aluminum **20466-00-6**, N,N'-Diethyl-3,3'-bicarbazole 33046-28-5 37271-44-6 50926-11-9, ITO **101697-53-4** 122738-25-4 178555-82-3 220160-62-3 220160-67-8 220185-30-8  
RL: DEV (Device component use); USES (Uses)  
(**electroluminescent device** with multilayer structure and ruthenium org. complex, org. derivs., and hydroxyquinoline aluminum)

IT 207287-34-1P  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(**electroluminescent device** with multilayer structure and ruthenium org. complex, org. derivs., and hydroxyquinoline aluminum)

IT 106548-41-8  
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
(**electroluminescent device** with multilayer structure and ruthenium org. complex, org. derivs., and hydroxyquinoline aluminum)

IT 121-44-8, reactions **6813-38-3**, 2,2'-Bipyridyl-4,4'-dicarboxylic acid  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(**electroluminescent device** with multilayer structure and ruthenium org. complex, org. derivs., and hydroxyquinoline aluminum)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 20 OF 27 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1998:758655 HCAPLUS  
DOCUMENT NUMBER: 130:59045  
TITLE: Styryl-containing polymer, its manufacture, and organic **electroluminescent device**, electrophotographic photoreceptor, and hole-transporting material using it

INVENTOR(S): Ueda, Hideaki; Kitahora, Takeshi; Nozaki, Takeshi  
 PATENT ASSIGNEE(S): Minolta Camera Co., Ltd., Peop. Rep. China  
 SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10310606	A2	19981124	JP 1997-119194	19970509
US 6066712	A	20000523	US 1998-74914	19980508
PRIORITY APPLN. INFO.:			JP 1997-119192	19970509
			JP 1997-119194	19970509

AB The styryl-contg. polymer is represented by  $[\text{CH}_2\text{CH}(\text{Ar}_1\text{CH}:\text{CHAr}_2)]_n$  ( $\text{Ar}_1$  = arylene;  $\text{Ar}_2$  = aryl, condensed polycyclic group, heterocyclic group;  $\text{Ar}_1$  and  $\text{Ar}_2$  may be substituted;  $n$  = natural no.). The above polymer is manufd. by (1) the reaction between a P compd.  $[\text{CH}_2\text{CH}(\text{Ar}_1\text{CH}_2\text{X})]_n$  and an aldehyde compd.  $\text{Ar}_2\text{CHO}$  or (2) the reaction between an aldehyde compd.  $[\text{CH}_2\text{CH}(\text{Ar}_1\text{CHO})]_n$  and a P compd.  $\text{Ar}_2\text{CH}_2\text{X}$  [ $\text{X} = \text{PO}(\text{OR}_1)_2$  or  $\text{PR}_2\text{S.Y}$ ;  $\text{R}_1$  = lower alkyl;  $\text{R}_2$  = cycloalkyl, aryl;  $\text{Y} = \text{halo}$ ]. The **electroluminescent device** contains the polymer in .gtoreq.1 org. compd. thin layer including a light-emitting layer and the photoreceptor contains the polymer as a charge-transporting material. The hole-transporting material composed of the polymer is also claimed. The styryl-contg. polymer shows good performance in charge-transporting and optical cond. even after repeated use.

IT 217449-88-2 217449-90-6

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(styryl-contg. polymer as charge-transporting material for org.

**electroluminescent device** and electrophotog.

photoreceptor)

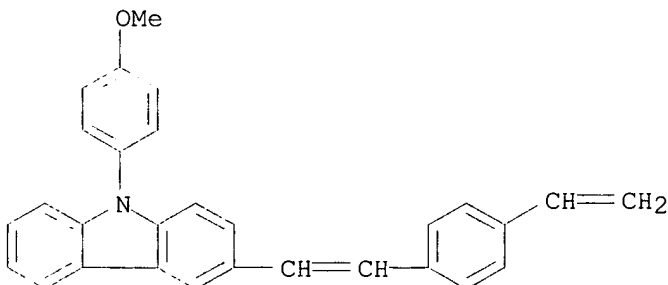
RN 217449-88-2 HCAPLUS

CN 9H-Carbazole, 3-[2-(4-ethenylphenyl)ethenyl]-9-(4-methoxyphenyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 217449-87-1

CMF C29 H23 N O



RN 217449-90-6 HCAPLUS

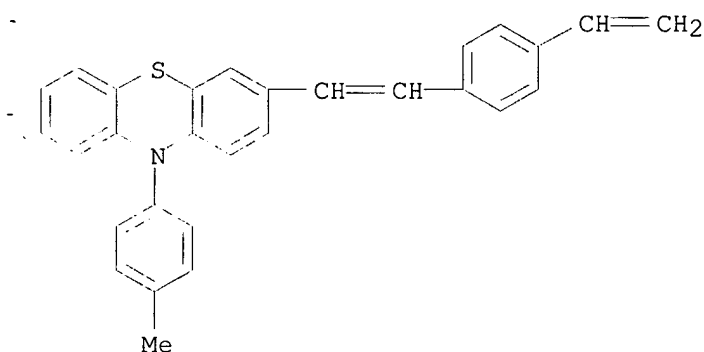
CN 10H-Phenothiazine, 3-[2-(4-ethenylphenyl)ethenyl]-10-(4-methylphenyl)-, homopolymer (9CI) (CA INDEX NAME)

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CM 1

CRN 217449-89-3

CMF C29 H23 N S



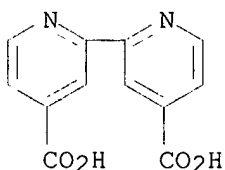
- IC ICM C08F008-00  
ICS C08F112-14; C08F112-32; C09K011-06; G03G005-06
- CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 37, 38, 73
- ST styryl polymer charge transport material; electrophotog photoreceptor  
styryl polymer charge transport; **electroluminescent device** styryl polymer optical **cond**; hole transport material styryl polymer
- IT **Electroluminescent devices**  
Electrophotographic photoconductors (photoreceptors)  
(styryl-contg. polymer as charge-transporting material for org. **electroluminescent device** and electrophotog. photoreceptor)
- IT 217449-48-4P 217449-51-9P 217449-54-2P 217449-56-4P  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(styryl-contg. polymer as charge-transporting material for org. **electroluminescent device** and electrophotog. photoreceptor)
- IT 184159-38-4 217449-58-6 217449-61-1 217449-63-3 217449-66-6  
217449-69-9 217449-72-4 217449-74-6 217449-76-8 217449-78-0  
217449-80-4 217449-82-6 217449-84-8 217449-86-0 **217449-88-2**  
**217449-90-6** 217449-92-8 217449-94-0  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(styryl-contg. polymer as charge-transporting material for org. **electroluminescent device** and electrophotog. photoreceptor)
- IT 1086-00-6, 1-Chloromethylpyrene 30029-79-9 89115-21-9 145772-03-8  
217449-95-1 217449-96-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(styryl-contg. polymer as charge-transporting material for org. **electroluminescent device** and electrophotog. photoreceptor)

L36 ANSWER 21 OF 27 HCAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1998:21632 HCAPLUS

KOROMA EIC1700

DOCUMENT NUMBER: 128:121429  
 TITLE: Organic **electroluminescent device**  
 with an inorganic charge transport layer  
 INVENTOR(S): Haase, Markus; Kynast, Ulrich; Boerner, Herbert;  
 Ronda, Cornelis  
 PATENT ASSIGNEE(S): Philips Patentverwaltung G.m.b.H., Germany  
 SOURCE: Ger. Offen., 6 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19625993	A1	19980102	DE 1996-19625993	19960628
EP 817281	A2	19980107	EP 1997-201809	19970616
EP 817281	A3	20000419		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 10097895	A2	19980414	JP 1997-171654	19970627
PRIORITY APPLN. INFO.:			DE 1996-19625993	19960628
OTHER SOURCE(S): MARPAT 128:121429				
AB	<b>Electroluminescent devices</b> are described which are provided with an inorg. electron-conducting layer formed from an n-type oxide of Ti, Zr, Hf, V, Nb, or Ta between a first electrode and the active layer (or the active structure which includes the emitting layer).			
IT	<b>6813-38-3</b> , 2,2'-Bipyridyl-4,4'-dicarboxylic acid RL: NUU (Other use, unclassified); USES (Uses) (org. <b>electroluminescent devices</b> with inorg. charge transport layers)			
RN	6813-38-3 HCAPLUS			
CN	[2,2'-Bipyridine]-4,4'-dicarboxylic acid (8CI, 9CI) (CA INDEX NAME)			



IC ICM H05B033-14  
 ICS H05B033-20; H01L033-00  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 76  
 ST org **electroluminescent device** inorg charge transport  
 IT **Electroluminescent devices**  
 (org. **electroluminescent devices** with inorg. charge transport layers)  
 IT Transition metal oxides  
 RL: DEV (Device component use); USES (Uses)  
 (org. **electroluminescent devices** with inorg. charge transport layers)  
 IT 1313-96-8, Niobium oxide (Nb<sub>2</sub>O<sub>5</sub>) 1314-23-4, Zirconia, uses 1314-61-0, Tantalum oxide 1314-62-1, Vanadium oxide, uses 12055-23-1, Hafnia 12060-59-2, Strontium titanate 13463-67-7, Titania, uses 17904-86-8

21392-84-7 25067-59-8, Polyvinylcarbazole 38215-36-0, Coumarin 6

RL: DEV (Device component use); USES (Uses)

(org. **electroluminescent devices** with inorg. charge transport layers)

IT 132084-94-7, Strontium niobate titanate

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(org. **electroluminescent devices** with inorg. charge transport layers)

IT 6813-38-3, 2,2'-Bipyridyl-4,4'-dicarboxylic acid

RL: NUU (Other use, unclassified); USES (Uses)

(org. **electroluminescent devices** with inorg. charge transport layers)

L36 ANSWER 22 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1996:417998 HCAPLUS

DOCUMENT NUMBER: 125:81284

TITLE: Long lifetime anisotropy (polarization) probes for clinical chemistry, immunoassays, affinity assays and biomedical research

INVENTOR(S): Lakowicz, Joseph R.; Szmazinski, Henryk; Terpetschnig, Ewald

PATENT ASSIGNEE(S): USA

SOURCE: PCT Int. Appl., 68 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9613722	A1	19960509	WO 1995-US14143	19951027
W: AU, CA, JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5660991	A	19970826	US 1994-330743	19941028
CA 2203772	AA	19960509	CA 1995-2203772	19951027
AU 9642797	A1	19960523	AU 1996-42797	19951027
AU 686490	B2	19980205		
EP 788601	A1	19970813	EP 1995-941349	19951027
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
JP 10508103	T2	19980804	JP 1995-514837	19951027
PRIORITY APPLN. INFO.:			US 1994-330743	19941028
			WO 1995-US14143	19951027

AB A method of **conducting** an immunoassay of a sample of interest, e.g., protein, is described that includes the steps of: (1) coupling a luminescent asym. metal-ligand complex to the sample of interest to form a coupled sample; (2) exciting the coupled sample with linearly polarized electromagnetic energy to cause the coupled sample to emit fluorescent light; and (3) measuring the polarization of the fluorescence emission as a measure of a biol. characteristic of the sample of interest.

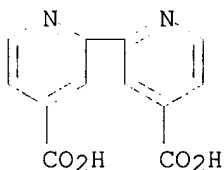
IT 6813-38-3, 2,2'-Bipyridine-4,4'-dicarboxylic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

RN 6813-38-3 HCAPLUS

CN [2,2'-Bipyridine]-4,4'-dicarboxylic acid (8CI, 9CI) (CA INDEX NAME)



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- IC   ICM   G01N033-53
-     ICS   G01N033-58; G01N033-60
- CC   9-10 (Biochemical Methods)
-     Section cross-reference(s): 15, 73, 80
ST   fluorescence polarization immunoassay metal ligand probe; protein label
     fluorescent metal ligand complex; ruthenium ligand complex fluorescence
     polarization immunoassay; osmium ligand complex fluorescence polarization
     immunoassay; affinity assay protein rotation probe
IT   Functional groups
     (bipyrazyl, ligands contg., metal complexes; luminescent metal-ligand
     probes for fluorescence polarization immunoassays and other methods)
IT   Albumins, uses
     Ferritins
     Proteins, uses
     RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical
     study); USES (Uses)
     (conjugates with fluorescent metal-ligand complexes; luminescent
     metal-ligand probes for fluorescence polarization immunoassays and
     other methods)
IT   Electroluminescent devices
     Flash lamps
     Optical fibers
     Pharmaceutical analysis
     (luminescent metal-ligand probes for fluorescence polarization
     immunoassays and other methods)
IT   Albumins, analysis
     Antigens
     Ferritins
     Glycolipids
     Glycopeptides
     Hormones
     Lipoproteins
     Nucleic acids
     Polysaccharides, analysis
     Proteins, analysis
     RL: ANT (Analyte); ANST (Analytical study)
     (luminescent metal-ligand probes for fluorescence polarization
     immunoassays and other methods)
IT   Agglutinins and Lectins
     RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
     (luminescent metal-ligand probes for fluorescence polarization
     immunoassays and other methods)
IT   Avidins
     RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
     (luminescent metal-ligand probes for fluorescence polarization
     immunoassays and other methods)
IT   Receptors
     RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
     (luminescent metal-ligand probes for fluorescence polarization
     immunoassays and other methods)
IT   Affinity

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(polarization assay; luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Immunoglobulins  
 RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical study); USES (Uses)  
 (G, conjugates with fluorescent metal-ligand complexes; luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Immunoglobulins  
 RL: ANT (Analyte); ANST (Analytical study)  
 (G, luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Immunoassay  
 (fluorescence-polarization, luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Functional groups  
 (haloacetyl, ligands contg., metal complexes; luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Functional groups  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (phenanthryl, ligands contg., metal complexes; luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Fluorescence  
 (polarized, luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Fluorescent substances  
 (probes, luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Diffusion  
 (rotational, luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT Lasers  
 (semiconductor, luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT 302-04-5, Isothiocyanate, uses 541-59-3, Maleimide 7791-25-5, Sulfonyl chloride  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (ligands contg., metal complexes; luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT 11028-71-0, ConA  
 RL: ANT (Analyte); ANST (Analytical study)  
 (luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT 58-85-5, Biotin 6066-82-6D, N-Hydroxysuccinimide, esters, metal complexes 7439-88-5D, Iridium, ligand complexes 7440-06-4D, Platinum, ligand complexes 7440-16-6D, Rhodium, ligand complexes 7440-33-7D, Tungsten, ligand complexes 9013-20-1, Streptavidin 62207-96-9 75777-88-7 85335-53-1 85452-91-1 109111-72-0 109130-68-9 146392-30-5 146600-19-3 178451-44-0 178451-45-1 178451-46-2 178451-47-3 178451-48-4 178451-49-5 178451-50-8 178451-51-9 178451-52-0 178451-53-1 178451-54-2 178451-55-3  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT 7440-04-2D, Osmium, ligand complexes 7440-15-5D, Rhenium, ligand complexes 7440-18-8D, Ruthenium, ligand complexes 11028-71-0D, Con A, conjugates with fluorescent metal-ligand complexes 15158-62-0 25013-01-8D, Polypyridine, metal complexes 37275-48-2D, Bipyridine, metal complexes 99837-92-0 157473-47-7 178451-56-4



RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical study); USES (Uses)

(luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT 64189-98-6P 122382-63-2P 160525-49-5P 160525-51-9P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)

(luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

IT 6813-38-3, 2,2'-Bipyridine-4,4'-dicarboxylic acid 13465-51-5, Ruthenium dichloride 15746-57-3

RL: RCT (Reactant); RACT (Reactant or reagent)

(luminescent metal-ligand probes for fluorescence polarization immunoassays and other methods)

L36 ANSWER 23 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1996:168110 HCAPLUS

DOCUMENT NUMBER: 124:246161

TITLE: **Electroluminescent device**

containing carbazole dimer derivative

INVENTOR(S): Himeshima, Yoshio; Kohama, Tooru; Okita, Shigeru

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

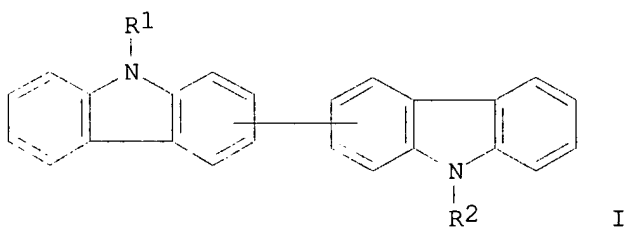
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08003547	A2	19960109	JP 1995-73529	19950330
JP 3139321	B2	20010226		
PRIORITY APPLN. INFO.:			JP 1994-63146	A 19940331
			JP 1994-78577	A 19940418
OTHER SOURCE(S):		MARPAT 124:246161		

GI



AB The device contains a carbazole dimer deriv. I [R1-2 = H, alkyl, halo, aryl, aralkyl, cycloalkyl; carbazolyl frame may be substituted for alkyl, aryl, aralkyl, (substituted) carbazolyl, halo, alkoxy, dialkylamino, trialkylsilyl]. I may be used as a hole-transporting material.

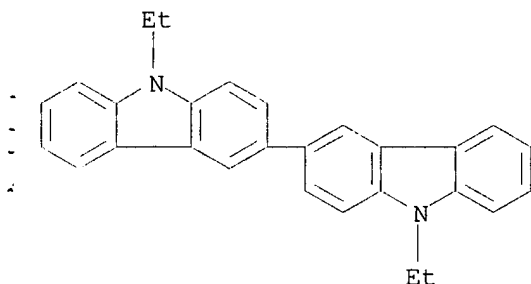
IT 20466-00-6P

RL: DEV (Device component use); PNU (Preparation, unclassified); **PREP (Preparation)**; USES (Uses)

(**electroluminescent device** contg. carbazole dimer deriv. with high luminance and luminescent efficiency)

KOROMA EIC1700

RN 20466-00-6 HCAPLUS  
 CN 3,3'-Bi-9H-carbazole, 9,9'-diethyl- (9CI) (CA INDEX NAME)

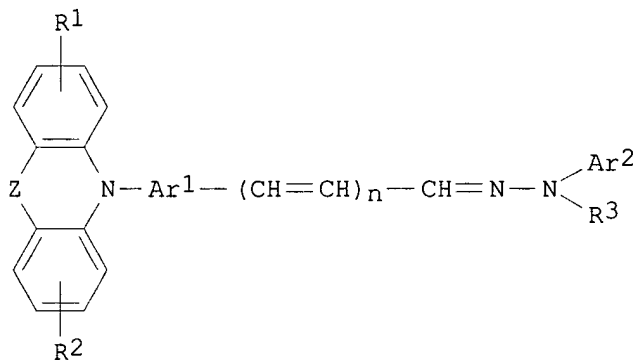


IC ICM C09K011-06  
 ICS H05B033-14  
 ICA C07D209-86; C07D209-88  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 27  
 ST carbazole dimer **electroluminescent device**  
 IT **Electroluminescent devices**  
 (electroluminescent device contg. carbazole dimer  
 deriv. with high luminance and luminescent efficiency)  
 IT **20466-00-6P** 57102-48-4P 57102-62-2P 116292-11-6P  
 144446-87-7P 175017-94-4P  
 RL: DEV (Device component use); PNU (Preparation, unclassified); **PREP**  
 (**Preparation**); USES (Uses)  
 (electroluminescent device contg. carbazole dimer  
 deriv. with high luminance and luminescent efficiency)

L36 ANSWER 24 OF 27 HCAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 1995:801493 HCAPLUS  
 DOCUMENT NUMBER: 123:213083  
 TITLE: Hydrazone compound and electrophotographic  
 photoreceptor and organic electroluminescent element  
 both containing the same.  
 INVENTOR(S): Takesue, Atsushi; Murakami, Yasuo; Watanabe, Takanobu;  
 Anzai, Mitsuthoshi  
 PATENT ASSIGNEE(S): Hodogaya Chemical Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 33 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 658815	A1	19950621	EP 1994-119757	19941214
R: DE, GB				
JP 08143550	A2	19960604	JP 1994-271845	19941012
US 5512400	A	19960430	US 1994-356126	19941215
US 5629421	A	19970513	US 1996-588331	19960118
PRIORITY APPLN. INFO.:			JP 1993-342273	19931215
			JP 1994-271845	19941012
			US 1994-356126	19941215

OTHER SOURCE(S): MARPAT 123:213083  
GI



AB The hydrazone compd. has the formula I [ Ar1 = phenylene, naphthylene, or biphenylene group, or anthrylene group; Ar2 = aryl; R1 and R2 = H, halogen, unsubstituted alkyl group, or an unsubstituted alkoxy group; R3 = an unsubstituted alkyl group, a (un)substituted aralkyl group, or a (un)substituted aryl group; Z = an ethylene group or a vinylene group; n is 0 or 1]. An electrophotog. photoreceptor is also described which has a photosensitive layer contg. the compds. on an elec. **conductive** support, and an org. electroluminescent element contg. the compd. as a charge transporting material.

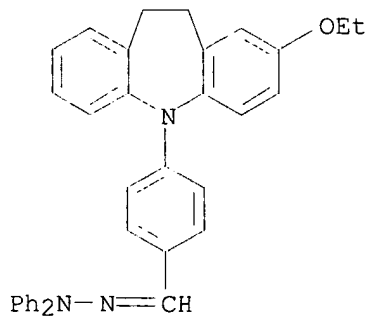
IT **167948-57-4 167948-61-0**

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(Hydrazone compd. as charge transporting agent for electrophotog. photoconductor)

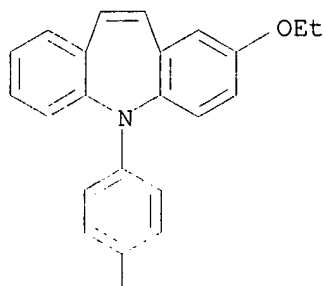
RN 167948-57-4 HCAPLUS

CN Benzaldehyde, 4-(2-ethoxy-10,11-dihydro-5H-dibenz[b,f]azepin-5-yl)-, diphenylhydrazone (9CI) (CA INDEX NAME)



RN 167948-61-0 HCAPLUS

CN Benzaldehyde, 4-(2-ethoxy-5H-dibenz[b,f]azepin-5-yl)-, diphenylhydrazone (9CI) (CA INDEX NAME)



Ph<sub>2</sub>N-N=CH

IC ICM G03G005-06  
ICS C07D223-26; C07D223-28  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 28  
ST hydrazone charge transporting agent electrophotog photoreceptor;  
electroluminescent element charge transporting agent  
IT **Electroluminescent devices**  
Electrophotographic photoconductors and photoreceptors  
(Hydrazone compd. as charge transporting agent)  
IT 167948-51-8P 167948-52-9P 167948-53-0P 167948-54-1P  
RL: DEV (Device component use); SPN (Synthetic preparation); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(Hydrazone compd. as charge transporting agent for electrophotog.  
photoconductor)  
IT 167948-55-2 167948-56-3 **167948-57-4** 167948-58-5  
167948-59-6 167948-60-9 **167948-61-0** 167948-62-1  
RL: DEV (Device component use); TEM (Technical or engineered material  
use); USES (Uses)  
(Hydrazone compd. as charge transporting agent for electrophotog.  
photoconductor)

L36 ANSWER 25 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1995:283799 HCAPLUS

DOCUMENT NUMBER: 122:32554

TITLE: Localization Effects in Asymmetrically Substituted Polythiophenes: Controlled Generation of Polarons, Dimerized Polarons, and Bipolarons

AUTHOR(S): Faied, Karim; Leclerc, Mario; Nguyen, My; Diaz, Art  
CORPORATE SOURCE: Departement de Chimie, Universite de Montreal,  
Montreal, QC, H3C 3J7, Can.

SOURCE: Macromolecules (1995), 28(1), 284-7

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The attachment to polythiophenes of substituents with different electronic properties produces polymeric materials with unusual elec. and optical properties. Controlled generation of polarons, dimerized polarons, and bipolarons was achieved through the formation of moieties of high and low band gap energy along the polythiophene backbone. The occurrence of such quantum wells decreased the recombination of the polarons in bipolarons as would be obsd. in sym. substituted polythiophenes. One of the most interesting consequences of this band-gap engineering is the ability of tuning the transport properties of these polymers. These novel characteristics make possible the formation of paramagnetic and

diamagnetic **conducting** states through the control of the redox state. They may also enhance the polaron population available for singlet exciton conversion in **electroluminescent devices**.

IT **147045-92-9**, Poly(4-butoxy-4'-decyl-2,2'-bithiophene)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(controlled generation of polarons, dimerized polarons, and bipolarons by localization effects in asym. substituted polythiophenes)

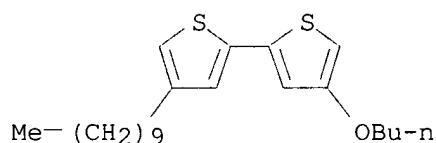
RN 147045-92-9 HCAPLUS

CN 2,2'-Bithiophene, 4-butoxy-4'-decyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 147045-91-8

CMF C22 H34 O S2



CC 36-5 (Physical Properties of Synthetic High Polymers)

Section cross-reference(s): 73, 76

ST substituent effect polythiophene polaron

IT Polaron

(controlled generation of polarons, dimerized polarons, and bipolarons by localization effects in asym. substituted polythiophenes)

IT Polaron

(di-, controlled generation of polarons, dimerized polarons, and bipolarons by localization effects in asym. substituted polythiophenes)

IT Polymers, properties

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(polythiophenes, controlled generation of polarons, dimerized polarons, and bipolarons by localization effects in asym. substituted polythiophenes)

IT **147045-92-9**, Poly(4-butoxy-4'-decyl-2,2'-bithiophene)

153233-47-7, Poly(4-bromo-4'-(octyloxy)-2,2'-bithiophene)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(controlled generation of polarons, dimerized polarons, and bipolarons by localization effects in asym. substituted polythiophenes)

L36 ANSWER 26 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1994:257404 HCAPLUS

DOCUMENT NUMBER: 120:257404

TITLE: Preparation of distyryl compounds and photoreceptors using them

INVENTOR(S): Ueda, Hideaki

PATENT ASSIGNEE(S): Minolta Camera Kk, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

KOROMA EIC1700

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05262679	A2	19931012	JP 1992-272798	19921012
JP 3147535	B2	20010319		
US 5413887	A	19950509	US 1992-962093	19921016

PRIORITY APPLN. INFO.:

JP 1991-275351	A1	19911023
JP 1991-269282	A	19911017
JP 1992-272798	A	19921012

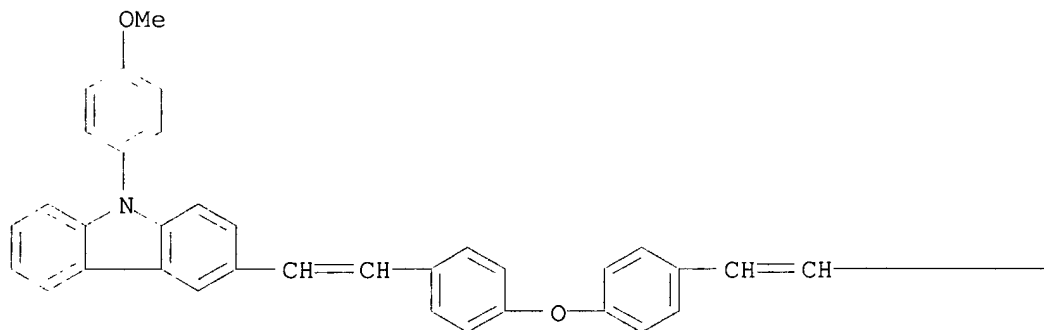
AB Ar1Ar2C:CHR1X(R2X)nR3CH:CAr3Ar4 [I; Ar1-Ar4 = H, (un)substituted alkyl, aryl, biphenyl, or heterocyclyl; R1-R3 = (un)substituted aralkyl, aryl, biphenyl, or heterocyclyl; X = O, S, or (CR4R5)m; R4, R5 = H or (un)substituted alkyl or aryl; m = 1-5; n = 0, 1] are prepd. Photoreceptors possess photosensitive layers contg. I on **conducting** supports as charge-transporting materials. The photoreceptors contg. I show excellent sensitivity, charge-transporting property, initial surface charges, and dark attenuation coeff.

IT 153113-22-5  
RL: USES (Uses)  
(charge-transporting agent, for electrophotog. photoreceptors)

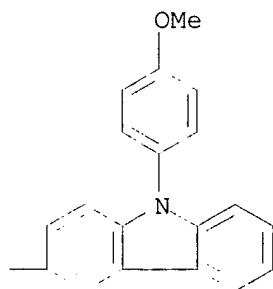
RN 153113-22-5 HCAPLUS

CN 9H-Carbazole, 3,3'-[oxybis(4,1-phenylene-2,1-ethenediyl)]bis[9-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)]

PAGE 1-A



PAGE 1-B



IC ICM C07C015-50  
ICS C07C211-50; C07C211-54; C07C217-80; C07C323-31; C07D209-86;  
C07D215-12; C07D223-22; C07D279-20; C07D279-22; C07D333-20;  
C07D333-36; C07D521-00; G03G005-06

KOROMA EIC1700

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 ST styrene compd prepn photoreceptor; charge transporting distyryl compd photoreceptor

IT **Electroluminescent devices**

Electrophotographic photoconductors and photoreceptors  
 (distyryl compds. as charge-transporting agents for)

IT 146823-24-7 150973-89-0 153113-17-8 153113-18-9 153113-19-0  
 153113-20-3 153113-21-4 **153113-22-5** 153113-23-6  
 153113-24-7 153113-25-8 153113-26-9 153113-27-0 153113-28-1  
 153113-30-5 153113-31-6 153113-32-7 153113-33-8 153113-34-9  
 153113-35-0 153113-36-1 153113-37-2 153113-38-3 153113-39-4  
 153113-40-7 153113-41-8 153113-42-9

RL: USES (Uses)

(charge-transporting agent, for electrophotog. photoreceptors)

IT 153113-29-2P

RL: PREP (Preparation)

(prepn. of, as charge-transporting agent for electrophotog. photoreceptors)

L36 ANSWER 27 OF 27 HCAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1993:505862 HCAPLUS

DOCUMENT NUMBER: 119:105862

TITLE: Preparation of distyryl compounds and photoconductors using them

INVENTOR(S): Ueda, Hideaki

PATENT ASSIGNEE(S): Minolta Camera Kk, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

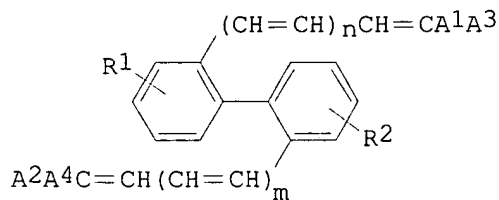
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05105638	A2	19930427	JP 1991-269282	19911017
US 5413887	A	19950509	US 1992-962093	19921016
PRIORITY APPLN. INFO.:			JP 1991-269282	A 19911017
			JP 1991-275351	A 19911023
			JP 1992-272798	A 19921012

GI



AB The title compds. I [R1-2 = H, alkyl, alkoxy, halo; A1-2 = H, alkyl, (un)substituted aryl; A3-4 = (un)substituted aryl, condensed cyclyl, heterocyclyl; m, n = 0, 1] and photoconductors comprising an elec.-**conductive** support having thereon a photosensitive layer contg. I are claimed. Electrophotog. photoreceptors using I as charge-transporting

agents are sensitivity and durability in repeated use, and I are also useful as charge-transporting agents for **electroluminescent devices**.

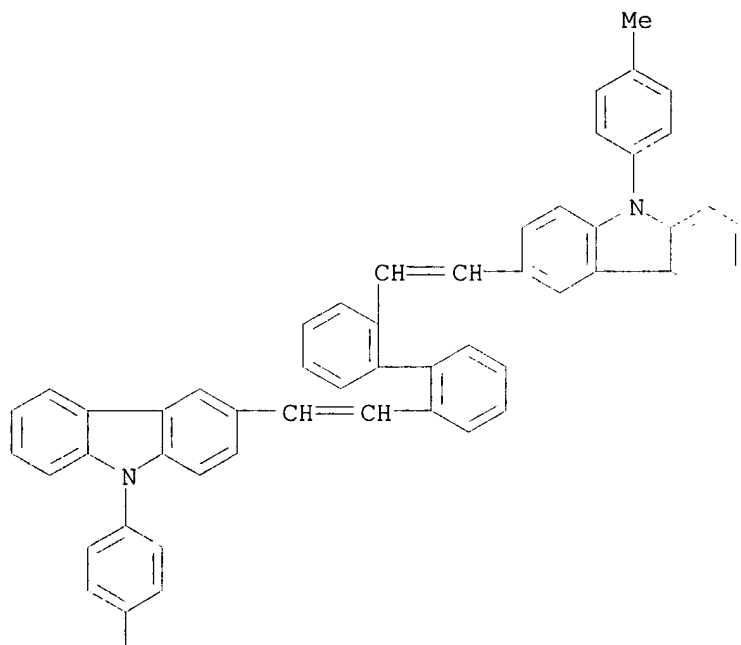
IT **149247-40-5**

RL: TEM (Technical or engineered material use); USES (Uses)  
(electrophotog. photoreceptor charge-transporting agent)

RN 149247-40-5 HCAPLUS

CN 9H-Carbazole, 3,3'-([1,1'-biphenyl]-2,2'-diyl-di-2,1-ethenediyl)bis[9-(4-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07C015-18

ICS C07C025-24; C07C043-215; C07C211-53; C07C211-54; C07D209-08;  
C07D209-82; C07D215-06; C07D219-02; C07D223-22; C09K011-06;  
G03G005-00

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)

Section cross-reference(s): 25

ST styrylbiphenyl charge transporter electrophotog photoreceptor;

**electroluminescent device** charge transporter

distyrylbiphenyl

IT **Electroluminescent devices**

Electrophotographic photoconductors and photoreceptors

(distyryl compds. as charge-transporting agents for)



IT 4181-05-9 89115-21-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Wittig reaction of, with bis(diethoxyphosphinylmethyl)biphenyl,  
electrophotog. photoreceptor charge-transporting agent from)

IT 69551-54-8  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Wittig reaction of, with formyltriphenylamines, electrophotog.  
photoreceptor charge-transporting agents from)

IT 149247-33-6 149247-34-7 149247-35-8 149247-36-9 149247-37-0  
149247-38-1 149247-39-2 **149247-40-5** 149247-41-6  
149247-42-7 149247-43-8 149247-44-9 149247-45-0 149247-46-1  
149247-47-2  
RL: TEM (Technical or engineered material use); USES (Uses)  
(electrophotog. photoreceptor charge-transporting agent)

IT 149247-31-4P 149247-32-5P  
RL: PREP (Preparation)  
(prepn. of, as electrophotog. photoreceptor charge-transporting agent)